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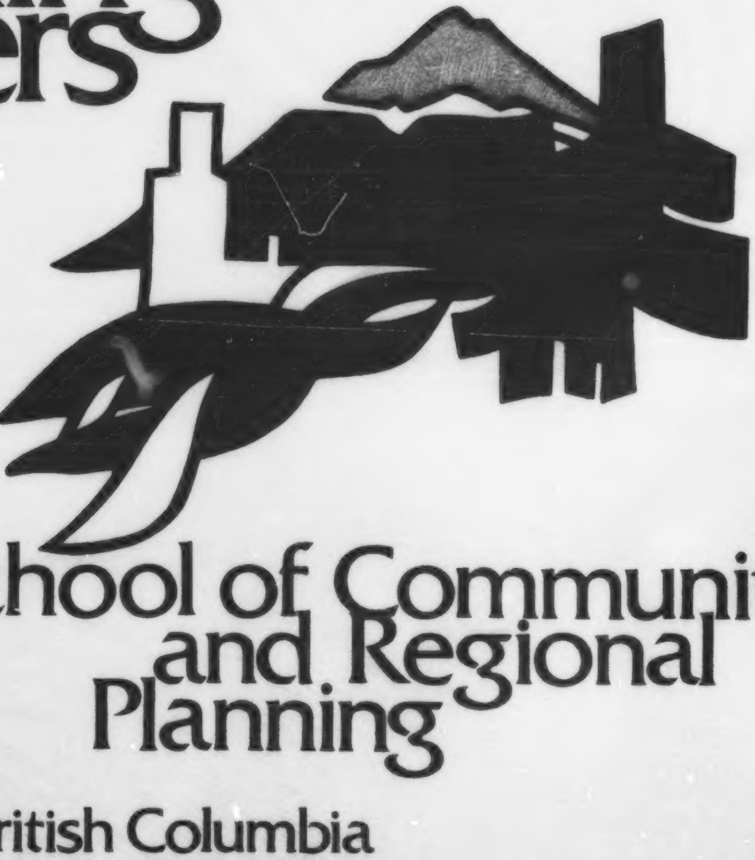

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Developing Cooperative Management Systems for Common Property Resources: Resolving Cross-Cultural Conflict in a West Coast Fishery

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ABSTRACT

Conventional approaches to resource management frequently invest authority in the hands of a technical management agency, with the result that the roles of manager and user are often cast in opposition as guardian and villain respectively. This study addresses cross-cultural contexts where this problem is exacerbated by the difficulties of communication and where management efforts are often frustrated by conflict. The objectives of the study are (i) to analyse the relationship between systems of property rights and systems of resource management, and (ii) to assess the potential for traditional communal property systems to provide a foundation for the cooperative management of local renewable resources held in common.

Preliminary chapters set out the theoretical context for this work, tracing the linkage between conventional approaches to resource management and the prevailing western understanding of common property, particularly Hardin's (1968) 'tragedy paradigm'. An analysis of the theoretical challenges to this line of thinking leads to the identification of an alternative, cooperative approach to resource management that builds on a refined definition of common property and which draws on empirical examples of traditional management systems from around the world.

A case-study of the clam fishery on the West coast of Vancouver Island is introduced as an illustrative example of a resource management conflict in a complex setting, beset by a number of problems including a chronic lack of communication and pervasive uncertainty. Using Rein and Schön's concept of 'frames', the dispute is defined in terms of the conflicting perceptions of the many stakeholder groups and from this viewpoint, the present conflict is shown to reflect the characteristic weaknesses of the conventional approach.

A solution to this conflict is sought through the the adaptation of the traditional resource use system of the aboriginal inhabitants of the area. By adapting the key characteristics of the traditional system to match the more complex demands of the many stakeholder groups, a set of founding principles is established and a skeleton framework for cooperative management is proposed. It is concluded that the conflict would best be resolved through a process of mediated negotiation that seeks to reduce frame conflict and encourage the growth of cooperation. A number of recommendations are offered that suggest how this process might evolve.

On the basis of the findings of the case study, it is concluded that traditional communal property systems can provide a sound foundation for the cooperative management of common property resources but that on the West coast, a number of substantive changes must first come about. In particular there is a need to develop amongst the stakeholder groups a more refined definition of common property and a more refined understanding of its linkage to management systems. There is also an urgent need to close the widening gap between the rapidly changing legal realities of Native rights and the outstanding aboriginal land question on the one hand, and the political and social reality in which many of the stakeholders operate on the other.

Finally, it is concluded that cooperative management systems of this type may well be appropriate in many similar resource management and international development contexts but that one principal barrier remains. If western society is unable to overcome the cultural inertia that prevents us from seeing beyond a simple choice of the strictly traditional on the one hand, or the strictly modern on the other, such promising opportunities will be lost. It is argued that this 'traditional/modern' dichotomy must be overcome if more creative and innovative approaches to the management of local renewable resources are to come to fruition.

ACKNOWLEDGEMENTS

I would like to offer my thanks to a number of friends, colleagues and advisors that have helped me in my research and writing. Firstly, I owe thanks to Helena Norberg-Hodge, John Page and the staff of the Ladakh Ecological Development Centre for putting me onto the right track. Without their patient support and guidance, I would have a very different understanding of 'appropriate development' today. Secondly, I would like to offer my thanks to Norman Dale and Bill Green, for it is largely through their committed work that I have come to understand some of the complexities of the political situation on the West coast. Thirdly, I owe an immeasurable amount to the people of Kyuquot, and in particular to the elders, to Richard Leo, and to the members of the Tribe's Fisheries Management Crew. I only hope that my work may contribute in some way to a more promising future for your community. Thanks must also be offered to each of the individuals who I interviewed in connection with this research who all answered my questions so candidly. To my faculty advisors, in particular Tony Dorcey, who offered such insightful comments, I can only begin to express my gratitude, and to my friends within the School of Community and Regional Planning at UBC, I owe a considerable debt that I will do my best to repay. Finally, and most important of all, my thanks go to Eva and to Midge who both gave me such tremedous support through all the ups and downs!.

CHAPTER 1:

INTRODUCTION

1.1 Objectives

Conventional approaches to resource management frequently invest authority in the hands of a technical management agency, with the result that the roles of manager and user are often cast in opposition as guardian and villain respectively. This study addresses cross-cultural contexts where this problem is exacerbated by the difficulties of communication and where management efforts are often frustrated by conflict. The objectives of the study are (i) to investigate such problems by analysing the relationship between systems of property and systems of management, and (ii) to assess the potential for traditional communal property systems to provide a foundation for the cooperative management of local renewable resources held in common.

1.2. Rationale

Conventional approaches to resource management in Canada draw their inspiration from the work of Gordon (1954) which first translated the problem of managing a fishery into a workable theory of economics.[1] Gordon's work is based on the assumption that fishers will act in self-interest, even if such behaviour imposes a cost on the wider community of resource users. This line of thinking was subsequently immortalised by Hardin's (1968) piece entitled 'The Tragedy of the Commons'.[2] Hardin's scenario describes how common property resources are doomed to overexploitation unless the state assumes the responsibility for their protection. This argument has provided the rationale for conventional resource management systems ever since.

In recent years however, empirical research has begun to uncover a series of examples of traditional management systems for local common property resources which call into question the inevitability of Hardin's tragic scenario and which challenge the very assumptions on which his work is based. These examples, combined with a growing literature challenging the tragedy paradigm on theoretical grounds, have led to the emergence of an alternative view of common property resource management. This study examines both the conventional and the alternative views, and goes on to explore how a refined understanding of common property leads to the identification of a new, more cooperative style of resource management that revises conventional roles and builds on the wisdom of traditional systems.

The rationale for this line of research stems from the fact that conventional management approaches, whether applied to wildlife management in the North of Canada, fisheries management on the West coast or development planning in the third world, are coming under increasing attack, particularly in cross-cultural settings where, it is claimed, they often fail to reflect the cultural, economic and political aspirations of local people.[3] One of the main messages of the *World Conservation Strategy*[4] was that our economic well-being is inextricably linked to the conservation of living resources and *Our Common Future*[5] underlined that this requires the participation of local communities. This theme is given even greater prominence in the latest (second) draft of the *World Conservation Strategy* (1990), which was recently circulated for comment.[6] Given accelerating population growth, a wide range of increasingly complex problems facing our economic, social and political systems and rising demands on our knowledge and use of science, there now appears to be a correspondingly greater need to explore new resource management systems. This then raises the question of how to achieve that goal; should it be a 'top-down/centralised' or a 'bottom-up/grass-roots' approach? Should these new approaches be based on the conventional resource management techniques of industrialised countries or should they be developed by rehabilitating and adapting indigenous resource management systems and upgrading traditional, local-level institutions? If these two approaches are not exclusive, how best can they be integrated?[7] This study seeks to provide answers to such questions by assessing the potential for traditional communal property systems to provide a foundation for more appropriate cooperative management systems - systems that do not simply achieve conservation, but which are also able to respond to the increasingly complex social and political demands that are being placed upon them.

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[1] Gordon, H. S. "The Economics of a Common Property Resource: The Fishery," *Journal of Political Economy* 62(2) (April 1954): 124-42.

[2] Hardin, G. "The Tragedy of the Commons," *Science* 162(1968): 1243-48.

[3] See for example Redclift, M. *Sustainable Development: Exploring the Contradictions*, (London and New York: Methuen, 1987): 158.

[4] IUCN *World Conservation Strategy: Living Resource Conservation for Sustainable Development* (Gland, Switzerland: International Union for Conservation of Nature and Natural Resources, 1980).

[5] WCED *Our Common Future* (Report of the World Commission on Environment and Development), (Oxford and New York: Oxford University Press, 1987).

Resource Managers, Management and Property Rights

It is not easy to generalise about resource managers nor characterise their work for the discipline is very broadly defined. Nonetheless, some general characteristics can be identified.

Firstly, it has been common for resource managers to think of their work as a technical problem, well distanced from controversial debate in the political arena. Though admittedly this is increasingly less so, resource managers have tended to think of their work first and foremost, as the application of scientific expertise and sound management technique. As Usher comments:

> "We are responsible for resource management not social programmes," "politics should be kept out of resource management," and "resource management is a scientific problem" are ideas commonly expressed by those who work for resource management agencies. The ideology of professional training and the bureaucratic nature of their work encourage them to see their immediate task as a highly specialised one, distant if not disconnected from its social context.[8]

At the same time, with the new mood of environmentalism thrusting conservation issues firmly into the spotlight, there is no lack of debate over the role of the resource manager in the larger context. Although a variety of alternative perspectives can be distinguished, such as the 'conservationist', the 'technologist' and the 'promoter', in most cases, few would argue that professionals working with renewable resources see themselves as conservationists and/or technologists.[9] This is because they often view the resources under their care as scarce rather than abundant and as a result, they perceive themselves as 'custodians' and view the conservation of natural resources as an imperative that transcends politics. This view, reinforced by the technical training such professionals receive, encourages resource managers to view their work as apolitical and makes them reluctant to participate in political debate. What they are perhaps less willing to recognise is that the management of scarce resources inevitably and invariably demands that they make highly political decisions, particularly those involving the allocation of harvest and the control of access.

Of more fundamental importance is the fact that conventional approaches to resource management are inextricably linked to the prevailing system of property. This is the central thrust of the study and is argued in some detail. The term property as used here does not refer only to material commodities that are owned, but also a system of rights or generally held concepts which are codified and enforced. These rights define who has the right to use what, to dispose of what, to benefit from what and within what limits. In all societies, members develop an understanding of the prevailing system of property rights just as they develop an understanding of the rules, constitutions and societal norms defining their culture. This understanding may only be held as an inner concept and it may develop without special training or thought, but it serves as the primary interface between the individual and the wider society. As Usher observes, this is especially so where the range of things, owners and uses is relatively limited, less so when the range is great.[10] It also accounts for why complex societies rely so heavily on lawyers and judges who have specialised knowledge of these matters. Yet it is apparent that even those societies which appear to be least 'advanced' rely on elders or similar authority-figures to adjudicate disputes on the basis of their accumulated knowledge of custom as well as their personal authority. The crucial role of property rights systems is as evident here as in any of the most highly industrialised societies - they are understood at the level of the individual and serve as a 'code of practice' allowing the acquisition, exchange or use of property in the normal course of affairs without creating undue social disruption. Property defined broadly in this way, can be considered to be 'the fundamental institution of any society'.[11]

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[6] IUCN *Caring for the World: A Strategy for Sustainability*, (Second Draft) (Gland, Switzerland: International Union for Conservation of Nature and Natural Resources, June 1990). See particularly Section 4. "Empowering Communities: Primary Environmental Care," pgs. 31-37.

[7] This section draws liberally from Berkes, F. and Farvar, M. T. "Introduction and Overview," in Berkes, F. (ed.) *Common Property Resources: Ecology and Community-Based Sustainable Development*, (London: Belhaven Press, 1989):1-17.

[8] Usher, P. J. "Property Rights: The Basis of Wildlife Management" in *National and Regional Interests in the North. Report of the Third Workshop on People, Resources and the Environment North of 60, Yellowknife, NWT, 1-3 June 1983* (Ottawa: Canadian Arctic Resources Committee, 1984): 389-415.

[9] Pearse, P. "Natural Resource Policies: An Economists Critique" in Krueger R. R. and Mitchell, B. (eds.) *Managing Canada's Renewable Resources* (Toronto: Methuen, 1977): 17-19.

It follows then, that each society's concept of property rights influences the way that society views the resources on which it depends. It also follows that if property is a cultural artifact then one society's view of resources may not be shared by another. The practice of resource management, if linked to property as argued, is thus guided by a cultural frame of reference that may not be shared by others claiming access to the same resource. If this is indeed the case, as for example in many cross-cultural contexts, the need emerges for some accommodation of different views. Usher comments:

> [M]anagement is a prerogative that flows from the system of property. Every system of management is based on certain assumptions, frequently unstated, about social organisation, political authority and property rights, all of which are closely interrelated. As no two societies or cultures are identical in these respects, there can be no such thing as a scientifically or technically neutral management regime that is equally applicable and acceptable to both. Consequently where two social systems share an interest in the same resources, there must be some accommodation in the sphere of property, as well as in the system of management, unless one is to be completely obliterated by the other. [12]

Given this need for accommodation, or what might be interpreted as a need for hybridisation, this study addresses the challenges facing resource management operating in cross-cultural contexts and explores how such accommodation can best be achieved.

The Canadian Context

In Canada, the management, allocation and use of renewable resources are matters of pressing public debate. There are at least two reasons for this. Firstly, there are increasing pressures on the resource base itself, both directly through increasing levels of demand, and indirectly through interrelated uses with detrimental environmental impacts. This can be seen in recent conflicts over proposed hydroelectric projects (the completion of the James Bay scheme in Quebec/Labrador), arguments over the acceptability of forestry-related activities (recent proposals to build pulp-mills in Northern Alberta) and confrontation over mining projects (proposals for mineral mining in the Tatshenshini River area of Northern B. C.). Secondly, aboriginal groups in Canada are becoming more vocal and are rapidly gaining the political high-ground in their efforts to achieve equal status and establish (or recover) a measure of special access to the resources on which they traditionally depend. The settlement of Native claims in the North, significant gains in the courts in B. C. and the spate of recent roadblocks sparked-off by the confrontation in Oka, Quebec, serve to underline this point.

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[10] Usher, P. J. "Property Rights: The Basis of Wildlife Management," op. cit., 391.

[11] Ibid., 389.

[12] Ibid., 390.

What has emerged from this increasing level of debate is the general recognition that the conservation problem and the aboriginal title question cannot be resolved independently of one another. Though not everyone agrees that this is a good thing and there is much discussion about how best to proceed, it seems likely that the settlement of aboriginal claims will have significant impacts for resource management throughout much of the country.

The important point here is that resolution of this issue cannot be achieved simply by adjusting the level of access or revising the allocation of harvest for natural resources - there are more substantial questions of rights that will have to be addressed. Property rights are, to put it bluntly, at the crux of the debate. It is worthwhile citing Usher at some length, commenting here with reference to wildlife management systems in the North:

> What is at issue is not simply the allocation of scarce resources among competing demands, although that is a thorny enough problem in any jurisdiction. In the North, the allocation issue cannot be resolved within a common conceptual framework of property rights. Who has rights to what resources, what manner of claim on these resources do the rights bestow, and what management prerogatives flow from these rights are questions also at issue. Management after all, presumes a human presence, which is always a social rather than an individual one. Property rights, social organisation and resource management are but facets of the same human presence.[13]
>
> and,
>
> [A]nyone who seriously believes that [resource management] is purely a scientific or technical problem, separate from the political process, and separate from the sphere of property rights, is operating in a world of fantasy and will never develop a workable management regime. More important is that both traditional native concepts of management and modern scientific management are founded on their respective systems of property. Thus, any blending of the two management systems requires also a blending of the two systems of property. By the same token, one cannot transform the system of property rights without fundamentally altering the logic and viability of the management regime. To understand the system of property rights which is the foundation of politics in any society, is to recognise the political base that underlies all of the technical and administrative details of management.[14]

In light of this, the primary goal of this study is to trace the linkages between systems of property and systems of resource management and to assess how hybrid management systems might be developed.

1.3 Research Questions

In light of the above, this study addresses the following research questions:

1. How does the conventional view of property influence the theory and the practice of resource management?
2. To what extent has the conventional view of property been challenged and what are the implications of alternative views?
3. Are traditional management systems based on communal property widespread, stable or resilient?

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[13] Ibid., 391.
[14] Ibid., 392

4. How can traditional communal property systems be adapted or rehabilitated to provide a foundation for co-operative management of renewable resources held in common?

These questions are addressed, firstly by synthesising and analysing the growing literature on common property resources and in particular identifying the linkages between this body of literature and the theory and practice of conventional resource management. Following this a case-study is used to provide an illustration of a typical resource management conflict in a cross-cultural context. Both the analysis and the specific conclusions of the case-study are then used to provide some indication of (i) how this conflict, and others like it, can best be overcome, and (ii) how resource management systems can best be improved.

1.4 Limitations and Scope

Interdisciplinary work of this type trespasses into many disciplines and it is appropriate that the limitations and scope of this work are defined.

This study considers the development of new styles of resource management from the perspective of common property and property rights. The literature on which the study is based draws particularly from the disciplines of human ecology, resource management, planning and anthropology although some of the material, particularly the literature on 'cooperative management', itself draws from a wider range of sources.

The study does not tackle the countless other legal, socio-economic and political dimensions of such problems in any rigorous manner. Where some of these broader implications are considered, this is done only superficially. To attempt a more comprehensive treatment of each of the many intertwined aspects of such management problems would demand far more time and a considerably more exhaustive research effort, in turn demanding substantial additions to an already lengthy study.

The study takes a bold step into the discipline of anthropology, presenting an account of the traditional resource use system of the Kyuquot Native Tribe and arguing that it exhibits all the essential characteristics of an effective communal property system. Much of this work relies on primary data collection, collaborative work with members of the Tribe and to a lesser extent on the few unsatisfactory accounts found in the ethnographic literature. To the knowledge of the author, little previous research has been done in this area and although the Nuu-Chah-Nulth Tribal Council completed a one-year research program on traditional fisheries in February 1989,[15] there is almost no further published work relating to the field. The description of the traditional system cannot therefore be considered definitive nor complete and it would be presumptuous to suggest that such superficial research could uncover the complexities of an entire cultural system. However, the material presented is adequate to show that a sophisticated system existed, that it was effective, and that it persists in the memory and social institutions of the Kyuquot people to the present day. The relevance of the traditional system for this study is that it provides a set of principles on which to build, and though further research might provide a more elaborate picture, it is unlikely that the essential characteristics of the system would be dramatically revised. It should also be stressed that the account presented here is the net result of some four months of collaborative research with members of the Tribe, respected elders and the Band Chief Councillor. That it was received by them with favour lends further credibility.

The applicability of the work is also limited. This study focuses specifically on renewable resources and more particularly on those resources 'held in common'. Though the ideas presented here might be equally applicable to other resources, the intent is to refer to resource management or development planning in a more limited context.

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[15] Berringer, P., Green, W. and Smith, V. *Ehattesaht Traditional Fisheries Systems: Final Report*, (Canadian Environmental Assessment Research Council (CEARC), FEARO Contract Number KA 171-8-2407, September 1989.)

1.5 Methodology

Research methodologies in the natural and social sciences have developed along similar, but increasingly divergent lines. For example, within the natural sciences it is common for the researcher to remain at arms length from the subject of the study and, in fact, the legitimacy of the work may be challenged if the goal of objectivity is in any way compromised. Within the social sciences however, it is often more difficult, if not impossible, for a researcher to remain entirely uninvolved, particularly when dealing directly with human subjects. As a result, over recent years a number of more collaborative or 'participatory' research methodologies have been developed and have gained critical acceptance.[16]

This study blends research styles from both branches of science but the methodology adopted here is closest to a participatory approach. As a result, some critics may argue that the work lacks essential objectivity and even leans towards advocacy. While the author has, to the best of his ability, remained as objective as possible it would be misleading to suggest that personal biases, not always substantiated by a rational assessment of the facts, have not emerged. That such political views infuse this work cannot be avoided. For those who are less familiar with such an approach, or who find it less palatable, it is hoped that the author's stance is sufficiently clear so as not to jeopardise their acceptance of the work as a whole - all efforts have been made to make the author's own views clear.

A further problem that has been recognised here relates to the *interdisciplinary* nature of the research. Much of the work that follows examines the role of social institutions and conventionally such work has been done by social scientists. However, the study of traditional resource use systems and common property is not the exclusive domain of any one discipline and such work cuts across many established boundaries. Furthermore, each discipline approaches the problem from a unique perspective; the economist might concentrate on how markets allocate or conserve scarce resources as compared to state or individual control; the sociologist might suggest that communal organisations have to do with group cohesion; the anthropologist might relate resource management practices to the maintenance of culture and values; the political scientist emphasises the importance of governance institutions in the success or failure of resource management; the planner might focus on the ability of local communities to participate in development decisions; the ecologist might look for the long term survival of traditional knowledge and how local knowledge of resources translates into management strategies that make ecological sense. All of these perspectives are important and they should be seen as complementary rather than exclusive alternative views. As Bromley points out :

> [T]he common thread obviously, is that the group as a whole has some abiding interest in survival, in cohesion, in the benefits and costs attendant to a particular use regime, and on economising on perceived scarcities.[17]

The strength of interdisciplinary research is that it can bridge all of these perspectives; the challenge is to make the assumptions behind the work as explicit as possible.

At another level, resource conflicts themselves can be analysed in terms of the assumptions that guide each of the stakeholders. Different parties hold to different positions that are informed not only by underlying interests but also by their world-view, experience and political biases. This introduces a further dimension of difficulty for the researcher who is trying to understand many different perspectives of a problem that is itself characterised by many stakeholders, each with their own unique perspective (see figure 1). Such a scenario might then best be described as 'a play within a play'.[18] The most widely accepted solution here would be to present each point of view in turn, and then attempt to make a reasoned assessment of the merits of each. In practice such impartiality is impossible to achieve, for even the questions that are posed are coloured by underlying assumptions. An alternative strategy is to establish a forum in which parties representing each of these perceptions can put forward their view, encouraging it to be challenged and thus explained.[19] Such a process of 'objectification' of the facts leads to the generation of a more refined picture of the issues, but in terms of the present study, it requires considerable time and a carefully structured process of participatory research - requirements that are beyond the reasonable scope of this level of research.

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[16] See for example; Maguire, P. *Doing Participatory Research: A Feminist Approach* (Amherst, Mass.: Centre for International Education, School of Education, University of Mass., 1987).

[17] Bromley, D. W. "The Common Property Challenge," in *Proceedings of the Conference on Common Property Resource Management*, (Washington D.C: National Academy Press, 1986):1-5; quoted in Berkes, F. and Farvar, M. T. "Introduction and Overview," op. cit., 1-17.

[18] I am grateful to Mr. Norman Dale who helped me understand this dilemma and suggested the phrase.

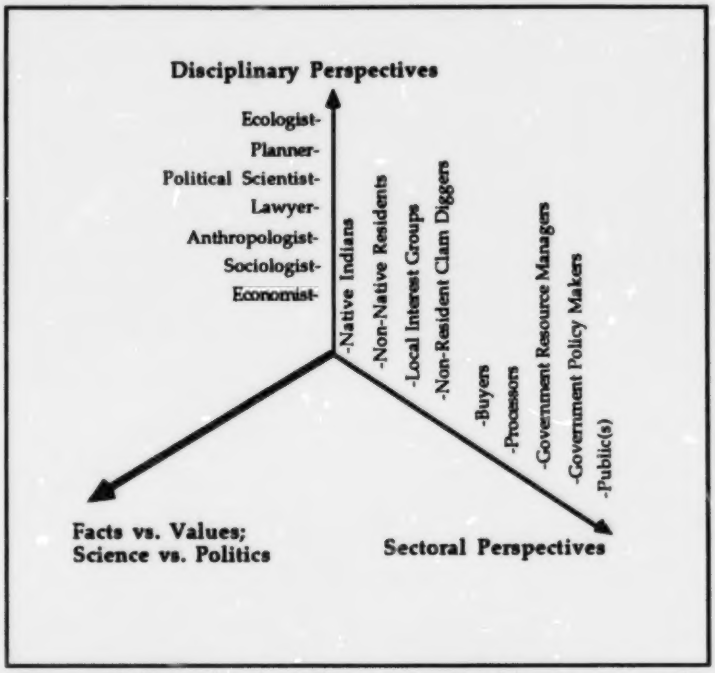
Disciplinary Perspectives
Ecologist-
Planner-
Political Scientist-
Lawyer-
Anthropologist-
Sociologist-
Economist-
-Native Indians
-Non-Native Residents
-Local Interest Groups
-Non-Resident Clam Diggers
-Buyers
-Processors
-Government Resource Managers
-Government Policy Makers
-Public(s)
Facts vs. Values;
Science vs. Politics
Sectoral Perspectives

Figure 1. The multi-dimensional problem encountered in the case-study research.

However, the framework adopted for the analysis of the case-study, which draws on Rein and Schön's work on 'frames', does tackle this issue head on, recognising that multiple perceptions are inextricably bound into the fabric of the larger problem under analysis.

Finally, the impartiality of the research effort can be challenged. A large part of the research effort involved collaborative work with the Kyuquot Native Tribe and over a period of some four months, a number of visits were made to the village of Kyuquot itself and many of the respected elders of the Tribe were interviewed at length. The author's account of the traditional resource use system that was produced as a result forms the backbone of a draft management proposal that was accepted by the Tribe and which is presently under consideration by the Nuu-Chah-Nulth Tribal Council.

This research methodology is clearly open to criticism for the study attempts to illuminate many viewpoints and yet as a result of this collaborative style, the thrust of the work is coloured by the Native perspective most strongly. Other researchers might for example, recast the problem as a tri-cultural conflict, involving not only western and Native worldviews, but also the worldview of the many clam diggers of S. E. Asian descent. The potential of a more complex approach of this kind was acknowledged but was not pursued for two reasons; firstly, because access to this cultural group proved to be very difficult; and, secondly, because many of the legal and political conflicts on the West coast are drawn primarily along Native versus non-Native lines. While some critics may challenge that this research is unbalanced or even biased as a result, it is the author's contention that it would have been impossible to develop an adequate understanding of a unique, Native Indian cultural system without such intimate contact. More to the point, the perspectives of other parties in the conflict, including recent Asian immigrants, are generally more informed by western science, economics and politics, each of which is more familiar ground.

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[19] See for example Mason R. O. and Mitroff, I. I. *Challenging Strategic Planning Assumptions*, (New York and Toronto: John Wiley and Sons, 1981).

1.6 Organisation

The preliminary chapters of the study outline the theoretical context, relevant literature and rationale. Subsequent chapters present the central problem and apply the theory to a case-study. The closing chapter presents an assessment of the case-study, offers a number of specific recommendations and draws some more general conclusions.

Chapter 2 addresses the concept of property and the theoretical challenges to conventional wisdom. It is here that the links between resource management and property systems are defined. The findings of this chapter are that the conventional view of common property reflects a persistent cultural bias and that more co-operative communal property systems have been systematically overlooked. Chapter 3 enlarges on this theme and documents how traditional communal property systems are widespread and have proved to be both effective and resilient. It offers an explanation for the emergence of the conventional view but argues that the rediscovery of traditional systems is the next logical step for resource managers and development planners alike. A set of normative criteria are established that collectively outline the ideal of 'appropriate co-operative management'.

The next two chapters present the case-study. Chapter 4 defines the problem, and describes the stakeholders, their respective roles, perspectives and management goals. It also describes how a lack of reliable data leads to pervasive uncertainty and tension. Chapter 5 presents a description of the traditional resource use system of the Kyuquot Native Tribe and derives a list of key characteristics.

Chapter 6 reflects on the theoretical ideas presented in the opening chapters and applies them to the case-study. A skeleton framework of a cooperative management system is then proposed and a number of recommendations are offered with regards to the process of establishing similar management systems of this type. The chapter closes with a number of more general conclusions.

1.7 Definition of Critical Terms

The term 'sustainable development' or 'sustainability' has been avoided in the main text because of recurrent difficulties over a precise definition. However, a number of the authors quoted have employed the term and a working definition should be established. In an attempt to avoid ascribing unintended meanings to others' use of the term, the 'lowest common denominator' definition from *Our Common Future*[20] has been used. Sustainable development is understood here to mean 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

'Resources' are defined here in their most limited sense as 'those components of an ecosystem which provide goods and services to humankind'. However, it is recognised here that there are good reasons to expand the concept of resources beyond the provision of short-term utility. It is increasingly recognised for example, that the use of one natural component of an ecosystem affects all other parts of that system through positive and negative feedbacks and that this may involve some cost; renewable resources are not always 'free' as is often supposed.

A further qualification of the definition of resources should be added. Resources can be subdivided into one of two overlapping classes; 'flows' and 'stocks'. Stocks have a fixed physical quantity and thus are exhaustible. Flows on the other hand are capable of regenerating under certain restricted conditions and are thus considered to be potentially 'renewable'. (This distinction is crude but such terminology is generally accepted and the intent is only to make clear the specific sense in which the term is employed). In some cases, the use of flow resources does not affect longer-term availability; tides or wind for example, can be freely used without fear of diminishing future use. On the other hand, some flow resources have critical thresholds below which they are no longer capable of regeneration. Fish or wildlife populations for example, fall into this category. As used in this study, resources refer to renewable (flow) resources that are of this second type.[21]

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[20] WCED *Our Common Future* op. cit.

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[21] This section borrows liberally from Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," in Berkes (ed.) *Common Property Resources*, op. cit., 22-32.

CHAPTER 2:

THE COMMONS DILEMMA, RESOURCE MANAGEMENT AND THE CHALLENGE TO THE 'TRAGEDY PARADIGM'

This chapter examines the concept of common property and explores how different definitions of the term lead to distinct assumptions about institutional arrangements for the management of renewable resources.

Firstly, the notion of property itself is shown to have evolved over time. Although many legal systems hold to a stricter historical definition of the term, in contemporary usage common property has come to mean *things* rather than socially enforceable *rights to things*. This distinction is more than semantic, for the confusion carries over into the institutional structures that are established to manage resources and gives rise to the widely held belief that common property is inherently unstable.

This chapter then outlines some of the criticisms of the contemporary understanding of the commons and goes on to show that the conventional understanding of the commons is both historically flawed and logically incorrect. An alternative interpretation of the commons is presented which directs attention towards a new approach for renewable resource management: the rediscovery of traditional communal property systems[22].

2.1 Property: An Evolving Concept

> The meaning of property is not constant. The actual institution, and the way people see it, and hence the meaning they give the word all change over time.... The changes are related to changes in the purposes which society or the dominant class in society expect the institution of property to serve.
>
> When these expectations change, property becomes a controversial subject: There is not only argument about what the institution ought to be, there is also dispute about what it is. For when people have different expectations they are apt to see facts differently.[23]

With these opening words, Macpherson in his (1978) essay on the meaning of property highlighted the crux of much of the current debate - that a universally accepted definition of common property remains elusive and that interpretations of the concept are as variable as the character of the institutions established to maintain property and property rights.[24] This chapter highlights these alternative definitions and explores how different interpretations of the term have led to very different institutional models for the management of renewable resources.

Despite recurrent difficulties over the precise definition of the term, there appears to be a general agreement that the conventional understanding of property and the sense it conveys in common usage differ considerably from the stricter meaning of property in all legal systems and in all serious treatments of the subject by philosophers, jurists and political and social theorists.[25] In conventional use, property is understood to be *things*, and often more narrowly as *things in private ownership*. In contrast, the stricter legal meaning of the word refers to a *right* and a *relationship* rather than a thing. This distinction appears to be one of semantics, but further analysis shows how such contrasting definitions lead to highly distinct approaches to resource management and the design of institutional frameworks.

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[22] The term 'communal property system' is used widely. Although the term is defined more precisely in chapter 2, in general it is understood here to include all community-based resource management systems. The term traditional also appears frequently and is defined as 'practices that have historical continuity among a group of people.'

[23] Macpherson, C.B. "The Meaning of Property," in Macpherson (ed.), *Property: Critical and Mainstream Positions* (Toronto: Toronto University Press, 1978): 1-14

[24] The term 'institution' or 'institutional arrangement' is defined here as 'the rules and conventions which establish people's relationship to resources, translating interests into claims and claims into property rights.' After Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common Property Regimes," in Berkes (ed.) *Common Property Resources*, op. cit., *22-32*.

[25] Ibid., 2.

Historical Definitions

The definition of property as a right predominated in ordinary English usage at least until the turn of the seventeenth century. At this time, the bulk of property was in land and the inequities of the feudal system in Europe afforded most individuals only very limited rights which referred to specified access and use. Examples of such arrangements for grazing, forest lands and fisheries can be found in most countries of Europe, particularly in Britain. Employed in this historical sense, the term 'property' does not include outright ownership but merely a set of specified use rights.

Even in historical usage however, property rights were not universally held by anyone or everyone, but were often granted to a specified group of users and were administered and enforced by some recognised body. Property rights were thus defined as *enforceable exclusive claims*. Macpherson comments:

> ...to have a property is to have a right in the sense of an enforceable claim to some use or benefit of something, whether it is a right to share in some common resource or an individual right in some particular things.[26]

According to Macpherson, property thus defined is distinguishable from mere momentary possession by this notion of enforcement and exclusivity. His definition of the term suggests that property is, in it's strictest sense, a political relationship amongst people, and between those people and some body or organisation that assumes responsibility for enforcement. Historically, this role was often assumed by the state, but it could equally be fulfilled by customary arrangements amongst users or by the force of conventional law.

Since the turn of the seventeenth century however, the concept of property, at least as commonly employed, has steadily evolved and changed. With the rise of capitalist economies in the late seventeenth and early eighteenth centuries, rights in land and forest became increasingly absolute and parcels of land became transferable commodities. Although the transfer of property rarely altered the actual nature of the right, as the market operated more freely, it began to appear that it was things and not the rights that were being exchanged. In this way, "..limited rights *in* things were being replaced by virtually unlimited and saleable rights *to* things."[27] Rights and things were already becoming blurred.

At the same time, the state began to protect the individual's right to *private* property, or to put it another way, the state began increasingly to guarantee the full right of the individual to the disposal as well as to the use of things. Marchak[28] comments that the long history of private property dates from this time. She cites, amongst others, John Locke, who in the late seventeenth century argued that men had the 'natural right' to property, that property rights took precedence over civil law and that the purpose of government was the preservation of that right.

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[26] Ibid., 2.

[27] Ibid, 8. (Emphasis in original).

[28] Locke, J. "Two Treatise on Government: Second Treatise on Civil Government," in *Social Contract: Essays by Locke, Hume and Rousseau* (London: Oxford University Press, 1960); cited in, Marchak, P. "What Happens When Property Becomes Uncommon?," *B. C. Studies* 80 (Winter 1988-89): 3-23.

Property in the Twentieth Century

Throughout the twentieth century this notion of property as private and saleable rights to things has remained, but a further shade of meaning has been added. With the rise of the corporation as the dominant form of business enterprise in many capitalist systems, property has also become synonymous with the expectation of revenue; to the twentieth century property holder, property rights have come to mean the right to an income.

In this way, the historical concept of property has evolved through time and has now assumed a very different guise. Though many legal systems hold to the stricter historical definition of the term as an enforceable exclusive claim to the benefit or use of something, in more conventional usage today, property is a thing, usually a private thing, which is understood to grant the holder a legitimate, even 'natural' right to an income for their exclusive benefit.

2.2 Conventional Wisdom: The Common Property Dilemma and The Rise of Resource Management

One of the most important implications of the evolution of the concept of property has been the emergence in the latter half of this century of what is widely referred to as 'the commons dilemma'. This dilemma, which has now assumed sufficient proportions to be accepted as a paradigm unto itself, is part of the founding rationale for much of contemporary resource management, particularly in the field of renewable resources.

The commons dilemma and the theories of economics that support it are based on what we shall refer to here as the 'conventional understanding' of property: that property refers to a category of things rather than socially enforceable rights. Although the legal system holds to the stricter, narrower definition, it is commonly believed that ownership of property carries with it an inalienable right to an income.

Common property, as understood in conventional economic theory, refers to a category of things to which no one can make a property claim and to which no one can be excluded from access or use. More crudely put, everybody claims that it is their legitimate right to draw income from common property. Such a view embraces the notion that the commons are a 'free-for-all', open to everyone and thus, by implication, that nobody will assume the responsibility for their management. This understanding of common property can be characterised by the maxim 'everybody's property is nobody's property'.

This interpretation of common property has since been immortalised by Garret Hardin's (1968) essay entitled "The Tragedy of the Commons."[29] Hardin argues that each user of a particular resource will seek to maximise their individual return and will compete with other users to do so. Each user, he asserts, will place self-interest above any community interest and will strive to increase their share, even to the point of depleting the resource upon which all the users depend. According to this view, such open-access resources held in common are doomed to over-exploitation unless the harvesting efforts of the users are restrained. Hardin depicted the only solution as 'mutual coercion, mutually agreed upon' and argued for the introduction of control through government regulation. Both Hardin and other writers have subsequently indicated that privatisation is a second, equally effective means of achieving the same goal of restraint.[30]

This understanding of common property was translated into economic theory as early as 1954 by Gordon[31] in his work on the Canadian fishery. Gordon's theory presents what will be referred to here as the 'market-based solution' to the commons dilemma. It is this work, and more importantly, the assumptions that underlie Gordon's theory of common property resources, that has formed the foundation of conventional resource management in Canada.

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[29] Hardin, G. "The Tragedy of the Commons," op. cit.

[30] Hardin and Baden (eds.) *Managing the Commons* (San Fransisco: W.H. Freeman, 1977).

[31] Gordon, H. S. "The Economic Theory of a Common Property Resource: The Fishery," op. cit.

The Market-Based Solution to the Commons Dilemma

Gordon's argument is that for a common property renewable resource of limited availability but of some economic value such as a fishery, resource rents (the surplus value over and above the opportunity costs for all factors of production) will dissipate over time. Maximum rents are obtained at a certain level of effort E1 - the point of maximum economic yield (MEY) where marginal costs equal marginal revenue. (See figure 2).

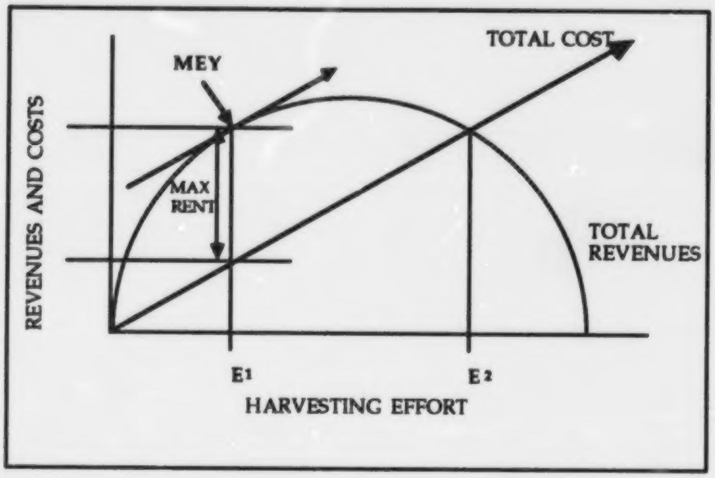

Figure 2. Resource rents in an open-access fishery and the formulation of maximum economic yield (MEY). After Grima and Berkes (1989:45).

It is in the best interests of a resource owner to maximise returns from the resource - the rent, but in an open-access fishery resource rents are non-appropriated income that attract new entrants to the fishery until effort expands to E2 - the point at which costs equal revenues and all the rents have been competed away. The fishery economist's solution to this problem is to limit the number of users and allocate the yearly harvest among them in order to prevent a race for the available catch. Instead the fishers concentrate on reducing costs per unit effort. More efficient resource users should be able to expand at the expense of the least efficient and order is produced out of chaos.[32] All that remains is to determine the level of allowable harvest that maximises returns but does not jeopardise the biological integrity of the resource - what became known as maximum sustained yield (MSY). The field of resource management developed to solve this problem.[33]

MSY for a (living) renewable resource is derived from the logistics curve describing a natural population (See figure 3). This 'S' shaped curve shows how population level flattens out at the carrying capacity 'K' - the maximum number of individuals that can be supported within the confines of the population's geographical range. For any given population the highest yield is obtained at the point of maximum productivity, which occurs at the inflexion point. This is the point at which the population regenerates itself at the fastest rate. MSY is then derived from data on population size and age structures and the desired harvest level is set. This approach - known as the population dynamics approach - is based on a series of assumptions. Firstly, the population must conform to the logistics curve and any seasonal or annual variations are assumed to be negligible. Secondly, carrying capacity, recruitment and mortality are all assumed to remain constant for the duration of the harvest cycle. In practice as analytical techniques have become more sophisticated, more elaborate methods are used which rely on yield and harvesting-effort relationships. Unfortunately, though these yield-effort approaches are more responsive to unanticipated changes in population dynamics, it is often difficult to develop satisfactory methods to assess catch per unit effort (CPUE) as desired.

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[32] The analogy here between Adam Smith's notion of the 'invisible hand' and Darwin's 'natural selection' is more than accidental. See Berkes, F. "Cooperation from the Perspective of Human Ecology" in Berkes (ed.) *Common Property Resources*, op. cit., 70-88.

[33] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," in Berkes (ed.) *Common Property Resources: Ecology and Community-Based Sustainable Development* (London: Belhaven Press, 1989): 33-54.

Shortcomings of the Market-Based Solution

In addition to the practical difficulties of application mentioned above, there are more substantial criticisms of the MSY approach, mostly stemming from the fact that other economic, social or ecological factors are not taken into account. The assumption of constant mortality, recruitment and carrying capacity rarely hold true and the variations in the observed logistics curve often exceed the tolerance of the model. In addition, MSY focuses on a single species or stock and cannot adequately account for the many complex interactions within the ecosystem such as predation or competition.

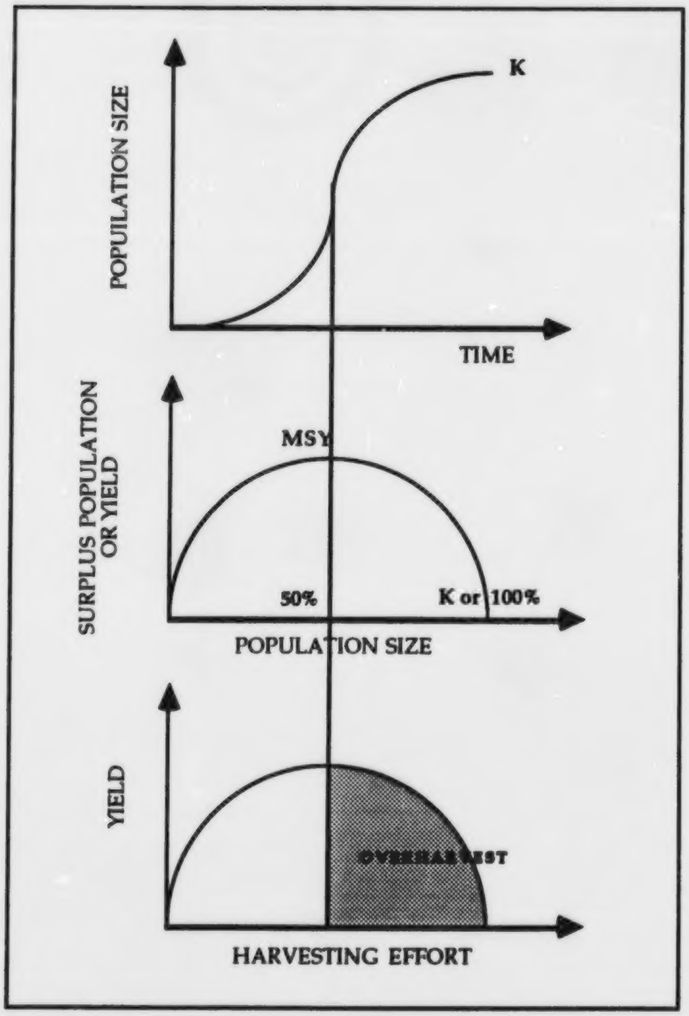

Figure 3. The logistics curve (upper graph) for a natural population and the formulation of MSY from basic ecological considerations. After Grima and Berkes (1989:47).

In response to such criticisms, the concept of optimum sustainable yield (OSY) was introduced, where optimum yield was defined as the amount deemed to provide the greatest overall benefit to society. In essence, OSY attempts to balance out the unanticipated variations in population dynamics by manipulating economic and social factors. However, though the optimum yield concept builds-in more more flexibility in this way, it does little to refine the weak assumptions upon which the population dynamics models are based and therefore cannot increase the accuracy of the management effort as a whole. Harvest rates are also surprisingly rigid due to fixed capital investments and a fixed catch level and thus the adaptability of economic and social factors is limited. As a result, though it does provide a wider margin of error, the concept of OSY has not resolved the fundamental problems of the population dynamics approach and it remains a vague notion which has proved difficult to establish in practice.

To the alarm of resource managers, economists and the many people who derive their income and livelihoods from renewable resources such as fisheries, whole industries have collapsed with dramatic social and economic effects. Not only that, but even the most highly refined approaches of this type have not always been successful at protecting the biological integrity of the resource itself, and time and again valuable stocks of renewable resources have collapsed.[34]

The resource manager's solution to the commons dilemma therefore faces a number of conceptual and practical challenges. Not only has it repeatedly failed to protect the resource itself, it also sets up a competitive management regime in which government officials are seen as the 'guardians' and the 'enforcers', and the harvesters seen as 'selfish' or 'greedy villains'. By casting the players' roles in opposition, management efforts are often frustrated by conflict and confrontation as each user tries to maximise their return and to 'cheat the system'. In many the quelling of unrest drains much valuable time and energy through rising transaction costs.

Such a scenario indeed seems to mirror the unfolding of the tragedy of the commons in which the commoners are not only the villains but also the victims. Each harvester appears to be motivated solely by greed and selfish-interest, maximising their own return at the expense of everyone else. In Canada, resource managers, fisheries scientists and even the government commissioners who study their plight have been seen to (metaphorically at least) throw up their hands in horror at the seemingly intractable dilemma of 'too many users chasing too few resources'.[35]

Despite such conventional wisdom, and an impressive literature in economics and resource management that embraces this view,[36] there are an increasing number of critics who not only express dissatisfaction with the performance of resource management methods, but also challenge the conventional understanding of the commons and the fundamental assumptions on which many elaborate management models are based. These critics argue that in spite of the apparent 'truth' of the tragedy paradigm, the historical commons were far from open-access, free-for-alls. They contend that resource managers and government commissioners alike have misunderstood the essential institutional character of common property and that the interpretation by Gordon, Hardin and others is not only misleading, but is historically incorrect.

The following sections will outline these challenges and explore their implications for resource management and the design of supporting institutional frameworks.

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[34] See for example, Larkin, P. A. "An Epitaph for the Concept of Maximum Sustainable Yield," *Transactions of the American Fisheries Society*, 106 (1977): 1-11.

[35] This maxim is a crude adaptation from the more famous quote of Peter Pearse, "too many fishermen chasing too few fish." See Pearse, P. H., Commissioner, *Turning the Tide: A New Policy for Canada's Pacific Fisheries* (Vancouver: Minister of Supply and Services, 1982): 4.

[36] Ciriacy Wantrup, S. V. and Bishop, R. C. " 'Common Property' as a Concept in Natural Resources Policy," *Natural Resources Journal* 15(3) (1975): 713-27, cite a number of examples in the economics literature that hold to the conventional line.

2.3 Challenging Conventional Wisdom: 'Alternative' Interpretations of Common Property

As noted above, the conventional solutions to the commons dilemma fall into two principal categories; (a) privatisation of the resource and reliance on the 'invisible hand' to manage the resource in society's best interest; and, (b) government intervention, either through direct regulation of the resource or indirectly through taxes and subsidies. However, a number of authors have presented a challenge to this understanding of the commons and have argued that a more critical examination leads to a third solution to the apparent dilemma facing resource managers.

Ciriacy-Wantrup and Bishop[37] argue that Hardin's paradigm presents an inadequate picture of humankind's experience with commonly-owned resources. They subscribe to the stricter historical understanding of the commons consistent with Macpherson's definition of property as an exclusive, enforceable claim to use and benefit but their argument differs in one crucial aspect. They contend that common property rights do not remain individual rights as Macpherson suggests, but that they are collective rights held by a group of co-equal users.[38] Historically, these collective rights permitted each of the co-equal users *access* and *use* of the common resource but did not imply more substantial rights of ownership. Under such arrangements users could not, for example, transfer their rights or their share of the resource freely, nor could they lose their rights by non-use. Furthermore, the holding of common property rights did not necessarily imply an *equal* share of the benefits of the resource over time but merely participation in a communal arrangement of management. Common property rights then, according to Ciriacy-Wantrup and Bishop, refer to rights of common use and not to a specific use right held by several owners.[39] This understanding of the commons is well established in formal institutions such as the Anglo-Saxon common law, the German Land law, the Roman law, and their successors.

If the term is understood in this sense (and it appears that this interpretation is most consistent with historical terminology), then both the institution and the resource subject to the institution can be referred to as the 'commons'. But the concept necessarily implies some *institutional arrangement amongst co-equal owners* and its use should be restricted accordingly. The economist's use of the term to refer to a free-for-all, open-access resource is inaccurate. Common property is not 'everyone's property' and potential users who are not recognised members of a group of co-equal users, or who do not have some prior arrangement with that group, are to be excluded.

Marchak[40] agrees with this more restricted interpretation, arguing that the conventional understanding of the commons as an open-access, free-for-all is misleading. She goes further however, and points out that if Macpherson's definition of property as an 'enforceable exclusive claim' is accepted, then the juxtaposition of 'common' with 'property' is actually a contradiction; for how can 'common' rights (the right not to be excluded) pertain to property which is by definition, an *exclusive* enforceable claim. Common property as conventionally understood becomes an oxymoron! Challenging the conventional understanding of the term, she writes:

> This [conventional] use of the term implies that property is a thing rather than a social arrangement of rights. As soon as we recognise the social source of property rights, the term 'common' in association with 'property' becomes a contradiction, for if property necessarily involves a socially enforced set of exclusive rights, then a situation wherein there are no enforceable rights involves no property. [41]

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[37] Ciriacy-Wantrup, S. V. and Bishop, R. C. " 'Common Property' as a Concept in Natural Resources Policy." op. cit.

[38] Ibid., 714.

[39] The authors note that in the legal literature this distinction appears as "common lands" on one side and "tenancy in common" on the other. Ibid, 715.

[40] Marchak, "What Happens When Common Property Becomes Uncommon," op. cit., 4.

[41] Ibid., 6.

Other authors present similar critical arguments. Berkes[42] for example, in his (1982) study of three fisheries in Canada, argues that the conditions necessary for the unfolding of the Hardin's 'tragedy' are unlikely to be met. Berkes notes that Hardin's assumptions are threefold; that fishermen will act in self-interest to the detriment of the wider group of users; that the resource is open-access; and, that the rate of exploitation must exceed the natural rate of renewability of the resource. Berkes's empirical studies show that these conditions are rarely fulfilled and he goes on to recast Hardin's tragedy as a hypothesis that can be falsified by empirical study. Despite the fact that resource management and a number of refined economic models have been founded on similar assumptions, Berkes argues that Hardin's hypothesis, and the notorious tragedy paradigm itself, should be rejected.

In support of such challenges, a number of authors[43] have contested the validity of the conventional interpretation of common property by arguing that Hardin's historical account of the English pasturage is itself false. As both Cox[44] and Marchak[45] point out, prior to the Enclosures Act in England, the commons were not open-access but were strictly regulated. Despite Hardin's suggestion that it was this act that put an end to the tragedy of the commons, they argue vigorously that it was actually the privatisation of the commons for sheep pasturage and for commercial crops that caused the tragedy and that contrary to Hardin's argument, some inherent failure of the commons system use was not the cause.

The tragedy of the commons paradigm is therefore under considerable attack. Both Hardin's reading of history and the assumptions on which his work is founded appear to be flawed. Even from first principles, the legal definition of property leads to conclusions about common resources which are at variance with Hardin's paradigm.

There appears to be a need therefore, to resolve this apparent conflict of interpretations and come to some more refined understanding of the nature of common property. To achieve this it is necessary to examine the classification of property regimes and identify more clearly how rights are applied to resources held in common.

2.4 Breaking the Impasse: Towards a Re-definition of Common Property Resources

In order to resolve the differences between the 'conventional' and 'alternative' interpretations of common property resources, let us first accept a general definition. This definition is taken from Berkes and Farvar[46] (1989) and follows that of Ostrum[47] (1986). In very general terms, all common property resources have two distinguishing features; (i) the exclusion of outsiders is problematic; and, (ii) each user is capable of subtracting from the welfare of other users. Thus, common property resources will be defined here as:

> A class of resources for which exclusion is difficult and joint use involves subtractability.

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[42] Berkes, F. "A Critique of the 'Tragedy of the Commons' Paradigm," paper presented to the 'Natural Management Systems" Symposium I-A181, IXth International Congress of Anthropological and Ethnological Sciences, August 1982, Quebec City.

[43] In addition to the references cited above, Clawson, M. "Comment on Managing the Public Lands" in Haefele (ed.) *The Governance of Common Property Resources* (Baltimore and London: Resources for the Future/John Hopkins Press, 1974); McCay, B. J. "Systems Ecology, People Ecology and the Anthropology of Fishing Communities" *Human Ecology* 6 (1978): 397-422; and even Schumacher, E.F. *Good Work* (New York: Harper and Row, 1979) and most recently chapters in Berkes, F. (ed.) *Common Property Resources: Ecology and Community-Based Sustainable Development* (Belhaven Press: London, 1989) all argue a similar line.

[44] Cox, S.J.B. "No Tragedy on the Commons" *Environmental Ethics* 7 (1985): 49-61.

[45] Marchak, "What Happens When Common Property Becomes Uncommon?" op. cit.

[46] Berkes, F. and Farvar, M. T. "Introduction and Overview" in Berkes (ed.) *Common Property Resources*, op. cit.

[47] Ostrum, E. "Issues of Definition and Theory: Some Conclusions and Hypotheses," in *Proceedings of the Conference on Common Property Resource Management* op. cit.

Using this definition and subsequent work by Bromley[48], Berkes goes on to develop a typology of four distinct property rights regimes under which common property resources are managed: (i) open access; (ii) communal property; (iii) state property; and, (iv) private property (See table I). It should be noted that these regimes may overlap; for example, a fishery may be used under some communal arrangement and yet the state may retain ultimate management jurisdiction.

1. OPEN ACCESS (res nullius) - Free for all; resource rights are neither exclusive nor transferable; these rights are owned in common but are available to everyone (and therefore property to no one).

2. STATE PROPERTY (res publica) - Ownership and management control is held by the nation state or crown; public resources to which use-rights and access rights have not been specified.

3. COMMUNAL PROPERTY (res communes) - Use rights for the resource are controlled by an identifiable group and are not privately owned or managed by governments; there exists rules concerning who may use the resource, and how the resource should be used; community-based resource management systems; common property.

4. PRIVATE PROPERTY - Ownership and management rights held by an individual or corporate body.

Table I. A selection of idealised property rights regimes. Adapted from Berkes and Farvar (1989: 10).

According to this typology, Hardin's tragedy of the commons paradigm only refers to those resources which are managed under open-access conditions. It is under these conditions that a free-for-all ensues, for there are no restrictions on access and no social arrangement to encourage the individual to be accountable to a wider community of users. However, as Berkes and Farvar point out, this is more or less a null set; there are almost no renewable resources that fall into this category. Years ago the oceans could have been categorised in this way, but under the proposed United Nations Law of the Sea (1982), even these vast territories are now under the jurisdiction of individual nation states or are under joint, international jurisdiction.[49]

Many fisheries in Western-industrialised nations are still today defined in law as open-access resources. This has ensured that they are managed according to the assumptions of the conventional view (indeed, it was the fisheries that inspired Gordon's work.) Given the stature of Gordon's analysis and the impressive institutional fabric of resource management for fisheries in Canada and elsewhere, those challenging Hardin's paradigm are under an obligation to demonstrate how and why such a definition is false and to offer some assurance that fisheries too can be satisfactorily managed in alternative ways.

Grima and Berkes[50] recognise that fisheries are indeed legally defined as open-access, but argue that they are 'common' only in the sense that the resource belongs to the public. Although many fishers might vehemently oppose such an assertion, fish resources are not available to all nor can anyone claim that access and use is a legitimate or even 'natural' right. In Canada at least, it is the state that regulates and manages the fishery and it is the state that retains almost sole responsibility for the issuing of licences and the control of access.[51] Such fisheries should then more correctly be defined as

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[48] Bromley, D. W. "Common Property Issues in International Development" *Developments* 5(1) (1989): 12-15.

[49] The air in the atmosphere may be one remaining example.

[50] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 37.

[51] It is conceded here that in Canada, the Federal Department of Fisheries and Oceans (DFO) has been pursuing a policy of involving fishers in management decisions through "Advisory Panels" since at least 1987. However, these

res publica (state property) and not *res nullius* (open-access resources) as Hardin and Gordon imply. Fisheries have little to do with common property in the absence of communal arrangements for management.

As Grima and Berkes[52] point out, conventional approaches to natural resources do not make such distinctions clearly. Conventional management approaches tend to view only the two extremes; either resources are private property or there is a free-for-all. Since a free-for all will almost certainly result in the degradation of the resource according to the tragedy paradigm, it is concluded that the solution is to create private property over scarce and valuable resources. What these approaches miss or at least fail to identify, just as Hardin did years earlier, is a possible third alternative for resource management - the re-institution of communal property regimes.

Communal property (*res communes*) emerges from this typology as a unique concept, very distinct from that portrayed by Hardin and Gordon. It is only created when members of an interdependent group agree to limit their claims on a resource in the expectation that the other members of the group will do likewise. Each and every member of the group is then obliged to subscribe to a set of established rules of conduct for resource use. In such a setting, the tragedy will only occur if this system of reciprocal obligations breaks down and if individuals fail to respect the other members of the group and reject their responsibilities to them. Gibbs and Bromley portray such an arrangement as a three-way choice between acting altruistically, fulfilling mutual obligations or 'free-riding':

> For a resource to be managed as common property [in the sense of *res communes*] each individual confidently relies on every other group member's contribution to management. If individuals contribute to the management of a collective good when they do not expect others to contribute, they are behaving altruistically. If individuals fail to contribute to the management of a collective good when they expect that others will, they are behaving as 'free riders'. Free riders respond to incentives to shirk responsibility to the group to which they belong.[53]

The tragedy of the commons is based on the assumption that individuals will, in fact, behave as free-riders and will fail to subscribe to the group's rules. Hardin's argument presupposes that each individual will reject any responsibility to the wider community of users and that anarchy will prevail; his argument suggests that these extreme conditions will inevitably arise and that the commons will inevitably collapse.

The essential point here is that when the argument is recast in this light, the unfolding of the tragedy seems less than inevitable. Moreover, adequate protection of scarce and valuable resources under communal arrangements does not, as might be argued by conventional critics, rely on the altruism of each and every member of the group. It is only necessary for a group of users to observe and respect a set of reciprocal obligations. Under these conditions, the third solution to the commons dilemma does appear to be viable; communal property systems seem to present a reasonable and practical alternative to either sole state control or the privatisation of the resource.

A somewhat more elaborate case arguing the same point has been developed by Grima and Berkes.[54] Rather than emphasising the ownership status of the resource, they examine the diversity of relationships involving property and access conditions under which a resource is held. A simplified two-dimensional classification of resources is presented which considers resources to be either under limited access or open access regimes and under private or common ownership. Table II sets out the four possible combinations.

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councils have little legislative authority and fishers still have no direct access to (and only minimal influence over) decision-making.

[52] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 37.

[53] Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit., 25.

[54] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 38.

Even with this two-dimensional classification (which is still but a sample of the vast range of complex arrangements under which resources are managed), it is possible to identify more than one scenario which leads to the degradation of the resource. It can also be seen that the privatisation solution favoured by economists is not the only acceptable management strategy; if access is only open to a recognised and limited user-group, and if the resource is controlled under enforceable rules, a stable management regime does appear to be viable.

(i) OPEN ACCESS, COMMONLY OWNED - These are resources for which management institutions are non-existent or have broken down; the tragedy occurs when the supply of the resource is smaller than the amount the users are taking. As long as the resource holds up at a given rate of controlled exploitation, the short-term situation may be quite favourable. But such open-access exploitation is not sustainable if scarcity develops.

(ii) LIMITED ACCESS, COMMONLY OWNED - This case may include two property rights regimes - some kind of local level arrangement or institution (communal property) or solely by the government (state property). The two are not always distinct; joint jurisdiction (co-management) is also possible.

(iii) LIMITED ACCESS, PRIVATISED - Clear rights to exclusive use and transferability.

(iv) OPEN-ACCESS, PRIVATISED - Such a situation cannot be expected to remain viable for long and could only occur if the owner of the resource is unable to defend it - if the rules enforcing exclusion have broken down. The resource will decline by trespassing and poaching by unauthorised users.

Table II. A two-dimensional classification of resources and the property/access conditions under which they are held. After Grima and Berkes (1989:38).

Whichever classification of resources one chooses to adopt, it is clear that there are alternatives to the limited management options presented by Hardin. But if this analysis of the common property debate is to be accepted and if communal property systems do present a third solution as suggested, a number of critical questions must be answered: Do such seemingly ideal communal property systems exist in practice? Are they historical curiosities or do they persist? If they do, in fact, work satisfactorily, how can we account for the fact that they seem to have been rejected in favour of more conventional approaches to resource management? The following chapter presents some of the answers to these questions.

CHAPTER 3:

THE WISDOM OF TRADITION: COMMUNAL PROPERTY SYSTEMS AND THE MANAGEMENT OF RENEWABLE RESOURCES

The previous chapter has outlined some of the theoretical challenges to the conventional understanding of the commons. It has been shown how a more critical analysis of the historical commons leads to a third solution to the 'commons dilemma', the rediscovery of communal property systems.

This chapter addresses how such traditional systems may have evolved, how they operated and how they have been overlooked by development planners and resource managers alike. A sequential model of development is then presented and it is suggested that the rehabilitation or adaptation of communal property systems is both practical and appropriate. A number of examples of rebuilding local institutions are then introduced from the literature of cooperative management and a set of normative criteria are established for 'appropriate cooperative management' founded on traditional systems.

3.1 The Rediscovery of Traditional Communal Property Systems

Over recent years, there has been a conspicuous growth of interest within the field of development planning and resource management in 'things traditional'. Whether this is due to the failure of 'mainstream' development initiatives and the search for viable and sustainable alternatives to current models of resource use as some authors suggest[55] or whether more simply a reflection of the wider growing disillusionment with raw technological approaches is open to debate. What is clear however, is that traditional practices, and more recently, the social and political institutions that support them, are attracting increasing interest.

As Berkes[56] has noted, research in this field has taken a predictable path. Initial interest focused on the relatively straightforward cataloguing of traditional knowledge of animals, plants and herbal medicine; ethnobotany, for example, falls into this category. Following this, research started to examine traditional practices and understandings of natural systems; the emphasis here was on indigenous 'technical' knowledge and the identification of traditional patterns of resource use that were ecologically sound.[57] Most recently however, the field has expanded into a more sophisticated study of what is generally called 'human ecology': the study of human societal systems in relation to the natural environment. It is within this area of research that studies of the political and social institutions and the philosophical frameworks guiding traditional resource use are to be found.[58]

Some authors argue that there is much to be learned from traditional knowledge, and even that it represents a pool of cultural diversity akin to genetic diversity. They go on to argue that such knowledge is a form of 'capital' and that traditional wisdom is just as vital for the conservation of our ecological systems as the 'biological capital' that the genetic pool represents. Berkes for example, comments:

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[55] Berkes, F and Farvar, M. T. "Introduction and Overview, " op. cit., 3.

[56] Berkes, F. "Environmental Philosophy of the Chisasibi Cree People of James Bay," in Freeman, M. M. R. and Carbyn, L. N. (eds.) *Traditional Knowledge and Renewable Resource Management in Northern Regions* (Alberta: University of Alberta, Boreal Institute for Northern Studies/International Union for the Conservation of Nature (IUCN), Commission on Ecology, 1988): 7-21.

[57] See chapters in Brokensha, D., Warren, D. M. and Werner, O. *Indigenous Knowledge Systems and Development* (Washington: University Press of America Inc., 1980); and, Olsen, S "Red Destinies: The Landscape of Environmental Risk in Madagascar," *Human Ecology* 15(1) (1987): 67-89.

[58] There is a rapidly growing literature in this field in addition to the journal *Human Ecology* itself. Some notable titles include; Bennett, J. W *Northern Plainsmen: Adaptive Strategy and Agrarian Life* (Arlington Heights, Ill.: AHM Publishing Corporation, 1969), and *The Ecological Transition: Cultural Anthropology and Human Adaptation* (Toronto and New York: Pergamon Press, 1976); Goldsmith, E. *The Stable Society, Its Structure and Control: Towards a Social Cybernetics* (Wadebridge, Cornwall, U. K.: The Wadebridge Press, 1978, 1984); McNeely, J. A. and Pitt, D. *Culture and Conservation: The Human Dimension in Environmental Planning* (Beckenham, U. K.: Croom Helm Ltd./International Union for the Conservation of Nature and Natural Resources (IUCN), 1985); Berkes, F. *Common Property Resources: Ecology and Community-Based Sustainable Development*, op cit.

> The existence of alternative philosophies of the natural environment is important as part of the cultural heritage of humankind. This "cultural diversity" is akin to biological/genetic diversity as the raw material for evolutionary adaptive responses. It is the very stuff of human cultural evolution.[59]

Whilst some might contend such a view of cultural heritage is verging on the romantic, and argue that there is little in traditional systems of relevance for today's complex and technological world, there is a growing body of literature that indicates many are willing to commit scarce time and money to investigate further; UNESCO for example, started a series of regional studies on traditional knowledge and the management of coastal systems in 1983; the FAO maintains an active interest in small-scale and community-based fisheries and has a program on forestry for local development ; the IUCN too has produced several volumes in this field and maintains a working group on Indigenous Knowledge. With such bodies supporting research, the field is not only growing rapidly, it is also rapidly gaining respect.

A subset of this larger literature focuses specifically on common property resources and the traditional institutions established to manage them. Much of this work re-examines some of the conventional assumptions related to Hardin's tragedy paradigm and seeks to demonstrate that alternative communal property systems are not only viable in theory, but are also widespread and successful in practice.[60] The most recent publication in this vein is *Common Property Resources: Ecology and Community-Based Sustainable Development*, edited by Fikret Berkes. In this volume, many empirical case-studies of traditional communal property systems are cited, lending weight to the argument that Hardin's tragedy paradigm is not inevitable, but rather that it is the exception rather than the rule. In the opening chapter, Berkes and Farvar[61] present a table which covers a wide sample of traditional systems from around the world. In order to demonstrate how widespread such systems are, the table has been reproduced in part below (See table III).

The distinguishing feature of all of these traditional systems is the communal arrangements that governs them. In contrast to the scenario anticipated by Hardin, each of these systems offers an example of a community of users subscribing to a set of rules and customs that maintain the viability of a renewable resource; in each case individuals abide by reciprocal obligations to their fellow users in the interest of the wider community. Observance of such rules is assured if and only if each member perceives that the benefits of co-operating exceed the potential benefits of acting in self-interest - in most cases a careful balance of penalties and incentives are built into the system.

Gibbs and Bromley[62] review a number of similar regimes and note that communal systems are most highly developed in irrigation, where effective water management is dependent on the interrelated actions of a unified set of water users. In communal irrigation systems the physical scope and pattern of rights helps to define the organisation that manages the system. The manipulation of water flows at the level of farmers' fields demands a highly refined set of agreements covering allocation, maintenance and dispute-resolution; a task that would be impractical, even impossible at the regional or national level. Effective irrigation is dependent on regular and sustained co-ordination amongst all the users, but if each and every decision had to be negotiated in turn, the system would be hopelessly cumbersome and impractical. Instead, the users subscribe to a broader code of conduct which guides their actions and ensures equitable allocation over time.[63]

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[59] Berkes, F. "Environmental Philosophy of the Chisasibi Cree People of James Bay," op. cit., 7.

[60] One of the milestones in this field of research was the 1986 conference on Common Property Resource Management, sponsored by the U.S. National Research Council. It was this conference that gave the field critical legitimacy and prompted the publication of the *Common Property Resource Digest*.

[61] Berkes, F and Farvar, M. T. "Introduction and Overview", 4.

[62] Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit., 27-29.

SYSTEM	COUNTRY/REGION	RESOURCE TYPE OR FUNCTION
Boneh	Iran	Irrigation water systems
Huerta	Spain	Irrigation water systems
Zanjera	Philippines	Irrigation water systems
Subak	Bali, Indonesia	Irrigation, rice
Jessour	Tunisia	Water runoff management
Hema	Arab Middle East	Pasture reserves
Agdal	Morocco	Range, pasture
Common of pasture	England	Range, pasture
Dina	Mali	Grazing, fishing, farming
Iriaichi	Japan	Village forests and meadows
Iriai	Japan	Coastal fishing
Valli	Adriatic, Italy	Lagoon fishing
Tambak	Java, Indonesia	Brackish water fish ponds
Acadja	West Africa	Lagoon fishing
Nituhuschii	Eastern subarctic Canada	Wildlife hunting territories
Jhum	N.E. India	Swidden (shifting cultivation)

Table III. A sampling of traditional resource management systems. Reproduced in part from Berkes and Farvar (1989:4).

Traditional livestock systems are characterised by a similar set of rules or code. Unless all the users follow agreed rules for the opening and closing of the pasture and for limiting stock rates, the productivity of the pasture may be depressed through the depletion of desirable foliage species. In response, farmers may enforce periodic closures in rotation to allow regeneration and may even impose a system of community-taxation to reduce the size of the herds as they approach critical limits. These rules can be backed by sanctions that incur costs to violators which exceed the benefit gained from breaking the code. Though the immediacy of cohesive collective management associated with a well functioning irrigation system is not so apparent for common pasture, the need for operational communal property rules still applies. Gibbs and Bromley comment that where traditional management regimes for rangelands are still strong, it has been shown that range deterioration is minimised. Similar accounts can be found of communal property systems for forestry, wildlife and fisheries.

In general then, communal property systems fulfil a number of critical roles in local communities. Berkes and Farvar[64] summarize these roles under five headings:

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[63] See for example, Cruz, M. C. J. "Water as Common Property: The Case of Irrigation Water Rights in the Philippines" in Berkes (ed.) *Common Property Resources*, op. cit., 218-235. See also, E. W. Coward Jr., "Property Rights and Network Order: The Case of Irrigation Works in the Western Himalayas," *Human Organisation* 49(1) (1990):78-88.

[64] Berkes, F and Farvar, M. T. "Introduction and Overview", op. cit., 11, (reproduced liberally).

1. Livelihood Security
With guarantied access rights to vital resources, all members of a community are assured of the opportunity to meet their basic needs. In many cases, elaborate rules for sharing the benefits are established to ensure that no-one starves. Reciprocal obligations for sharing and mutual help also appear to be widespread. These are particularly important in cases where resource availability fluctuates over time. All communal property systems are characterised by the presence of arrangements for allocation of the resource among co-owners.

2. Access Equity and Conflict Resolution
Communal property systems normally provide mechanisms for the equitable use of resources with a minimum of internal strife or conflict. Rules mutually agreed upon by all members of the group provide an efficient means of conflict resolution and reduce transaction costs.

3. Mode of Production
Community-based resource management systems often form the basis for the system of production. Typically set-up at the village or sub-tribal levels, the management systems consist of work teams that include a number of households. Community members share a common culture, knowledge of the resource and knowledge of the resource-use rules, facilitated by the simple rule 'you must live in this community to use the resource'. Communal property systems serve as an interface, not only between society and the resource, but also between the individual and the society at large. Social rules and obligation are often defined in terms of one's participation in work teams and one's contribution to management efforts.

4. Resource Conservation
Communal property systems are basically conservative in the way resources are used, with many coming close to achieving local self-sufficiency. The emphasis is on taking only what is needed and no more. There are often social sanctions that prohibit the accumulation of a surplus and discourage individual gain at the cost of the community as a whole.

5. Ecological Sustainability
It can be argued that communal property systems deserve credit for many of those resources which have remained productive throughout the generations. The traditional resource use systems not only establish customary *rights* but often incorporate rituals and *rites* that help to synchronise harvesting with the cycles of supply. These serve to reinforce social controls in maintaining a productive resource from generation to generation.

The Evolution of Co-operation

In concert with the growing interest in traditional systems of this type, there is an expanding literature that addresses the theoretical aspects of such co-operative group behaviour. Perhaps the most significant contribution here is Robert Axelrod's book *The Evolution of Co-operation*.[65] In this study, Axelrod set-up an international computer tournament simulating the infamous 'prisoners dilemma'. The results of his study showed that co-operative behaviour can develop and thrive, even overcoming more aggressive, selfish strategies. The key finding is that reciprocal behaviour will always 'win' but for co-operation to evolve, a number of conditions should be met. Firstly, the co-operators need to have some long-term investment in their relationship; secondly, their relationship should not be limited to a finite number of exchanges; and thirdly, that communication between the co-operators helps to assure the stability of their mutual arrangement.

These findings have been applied to the dynamics of a community through the discipline of human ecology. Although this kind of study is still in its infancy, it is becoming clear that co-operative systems, once established amongst a group of people sharing long-term interests, are both stable and resilient. In this context, traditional communal property systems are attracting much attention and, in particular, there is much interest in how such systems have evolved and how the balance of penalties and incentives are maintained. While this line of inquiry is too extensive to be pursued here in any great detail, a number of key points should be acknowledged.

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[65] Axelrod, R. *The Evolution of Co-operation*, (New York: Basic Books Inc., 1984).

Traditional systems are clearly the results of many years (or even generations) of cultural evolution and what they represent are the *net-products* of an extended period of social learning. To that extent, it can only be assumed that there may have been many failures along the way but that through trial and error, stable systems have emerged. The mechanisms by which the results of this process of learning are then encoded into some social institution vary from culture to culture, but it is reasonable to assume that they *are* encoded is some form - if only to minimise the time and effort that would be required to reach agreements on co-operative use on a case-by-case basis.

Such an 'evolutionary' view of cultural systems also dictates that each system matches a particular geographical and social setting. Each set of rules or code has emerged in a specific context and has been tailored to meet certain problems that may be unique. This in turn suggests that communal systems are only transferable under limited conditions - each setting demands its own approach.

The body of literature supporting the continued existence of traditional communal property systems is expanding and is contributing more and more evidence to show that the tragedy paradigm is flawed at its root. It is also becoming apparent that traditional systems are not merely relics of the past that have withered away in the face of progress and development, but they have proved to be widespread and resilient.[66] In the face of such growing evidence, one is forced to challenge conventional wisdom and ask how such traditional systems could have been so overlooked.

3.2 The Origins of the Conventional View

A number of authors have attempted to account for the origin and evolution of the conventional, 'misguided' view of common property. For the sake of convenience, their arguments have been divided here into two categories; the 'colonial argument' that looks to links between property rights, colonial resource exploitation and the development of the capitalist economy; and the 'competition argument' that sees the conventional view as a reflection of a pervasive western cultural bias which emphasises competition and the supremacy of the individual rather than co-operation and communal interests. These two categories frequently overlap and it would be a mistake to see them as entirely distinct.

The Colonial Argument

Grima and Berkes[67] hold to the 'colonial argument' and link the conventional definition of property rights to the climate of colonial expansionism so dominant over the last few centuries. Firstly, they contend that Europeans developed their own unique concept of land and resources over a period of many centuries. This view assured that all resources and all available lands would be used to their fullest extent, a position that supported colonial exploits and the spread of capitalism very well. Citing the example of the fur trade in Canada in the seventeenth century, Grima and Berkes argue that colonial trade did not commence in any major way until populations of European beaver had been decimated. This and other examples suggest that Europeans started international trade as a means of gaining access to resources that had been stripped or rendered unprofitable at home.

More to the point, the prevailing European view of the natural world at the time portrayed humans as superior beings, not part of the harsher realities of nature at all, but somehow more advanced, more sophisticated and more cultured. This view of land and resources helped reinforce the belief that

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[66] Berkes, for example, in his work with the Cree in the James bay area of Northern Canada presents a general model of communal property systems and demonstrates how the *nituhuschii* system of hunting territories has been repeatedly suppressed by colonial development. He goes on to show that despite being undermined in this way, it has recovered each time and has remained viable and successful to this day. See Berkes, F "Cooperation from the Perspective of Human Ecology" in Berkes (ed) *Common Property Resources*, op. cit., 70-88.

[67] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 38.

Europeans had reached a superior level of civilisation and encouraged the colonisation of America, Asia, Africa and Oceania where the natives had not reached this stage of 'development'.

In this context Grima and Berkes argue that the rise of capitalism and the industrial revolution in particular were woven together by a pervasive belief in the exploitation of the resources of foreign colonies and the overall superiority of European civilisation. This in turn gave rise to the notion that all commodities, resources included, should be individually owned, fully mobile and transferable in the marketplace to ensure that the development process marched on unhampered.[68] Grima and Berkes suggest that such views formed the basis for the conventional view of resources as private property largely because, for the colonist who professes them, *it is such an arrangement that assures a well functioning and efficient system.*

The Competition Argument

The 'competition' argument is put somewhat differently. Berkes[69] for example, argues that western society emphasises competition systematically and overlooks or underestimates co-operation. He argues that this tendency can be traced back to Darwin's 'survival of the fittest' and beyond that to Adam Smith's 'invisible hand'. From this perspective, the tragedy paradigm is merely an extension of this bias into the field of resource management.

Berkes suggests that the character of our contemporary western social environment reinforces this view. He suggests that the modern metropolis is characterised by large numbers of people living in a fluid society and alienated from any sense of community and that in such an environment, the tragedy becomes fairly likely. He comments:

> ... to many whose world-views are shaped by the urban-industrial society in which they live, with little intimate contact with neighbours and other members of society, the tragedy may appear inevitable. By contrast, use of the commons for long term sustainable yields is relatively more likely in the case of people living in small groups with tight communal control over the resource base, and over social behaviour. Not being familiar with such societies, many western trained, urban based resource managers and scientists overlook possibilities for sustainable management of commons in such situations. [70]

Though he admits that part of the reason for the robustness of the conventional view may be related simply to a morbid preoccupation with tragedy, Berkes suggests that this emphasis on competition is a more likely explanation. As he points out, even in the population ecology literature, with its preoccupation with interrelationships and system dynamics, theories of cooperation are still in their infancy.

Whichever one of these arguments one subscribes to, it is clear that the European concept of common property is very much a cultural phenomena, developed and fed by the prevailing views of society rather than by any logical analysis. It is equally clear that many of these biases were carried beyond Europe by the spreading wave of colonial expansion, North America being no exception.

Resource Exploitation in North America

In North America, the spreading wave of colonisation brought with it many of the conventional assumptions about the use of resources and the property rights attached to them. Grima and Berkes[71] have investigated this further and from the works of Ostrum and Ostrum[72], Loftus et al.[73] and Grima and Allison[74] identified five pervasive traditions in North America regarding the use of natural resources such as fish, wildlife and water. Each of the principles listed below emphasises the rights of society at large to the exclusion of community-based rights such as those of the salmon fishing Amerindian tribes of the Pacific coast of North America.[75]

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[68] See also Bromley "Common Property Issues in International Development," op. cit.

[69] Berkes, F "Cooperation form the Perspective of Human Ecology" in Berkes (ed) *Common Property Resources*, op. cit., 70-88.

[70] Ibid., 71.

[71] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 43.

1. Natural resources should be held or owned in common by all citizens.
2. Access is open to all citizens.
3. Access to and use are free of royalty and rent.
4. Any limitation of one or more of the above ideals is to be permitted only when current users of a resource consent to the specific limitation.
5. Property rights of some kind and degree accrue to the users as a consequence of access and use - whether it be opportunist, permitted or licensed - and these rights are not to be swept aside arbitrarily.[76]

The authors reiterate the argument of Regier and Grima[77] that these ideals of open access may be not only internally inconsistent (particularly the first three with the last two), but moreover may be incompatible with some major societal goals, such as:

1. The productivity of the resource should be sustainable in perpetuity.
2. The regime of resource use and management should not lead to undue burdens on the users (for example the loss of a source of livelihood).
3. The administration of the resource and user system should not be costly or oppressive.
4. The owners of the resource (the public) should share with the users the resource rent.

The colonisation of America was, in part at least, a response to the oppressiveness and inequities of Europe. Given that the colonisers sought freedom in this new 'land of opportunity', it is perhaps understandable that these ideals of open-access were held-to so strongly. America must also have seemed to be a vast land of inexhaustible bounty and riches and this 'frontier' mentality would further encourage open-access ideals. It is not surprising then, that once set in place, North American open-access ideals assumed considerable stature and were solidified in legislation. Resource management accepted the same code despite the possible contradictions referred to above.

The essential point here is that any attempt to reform institutional arrangements will face not only the considerable task of challenging conventional wisdom, but also overcoming both bureaucratic inertia and the potential resistance of those users that currently enjoy benefits from the present system. In these circumstances, it seems likely that current users might reasonably be expected to defend the system however inappropriate it may seem 'from the outside'.

The challenge to the conventional understanding of the commons is considerable and the arguments presented here are but a sample of the literature in the field. But whichever argument one subscribes to, it seems apparent that the conventional view is a cultural phenomenon that has suited western civilisation well and which has served its interests. It has been enshrined in contemporary approaches to resource management and to a large extent carried over into many of the recent international development initiatives. But it remains merely a cultural phenomenon, restricted to western thinking and as such may not be appropriate in all contexts. Such wisdom may have maintained stable management regimes for many years but in the face of the factual and conceptual arguments presented above, and in light of the recurrent failures of conventional approaches, the tragedy paradigm and all it has inspired deserves to be re-assessed.

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[72] Ostrum, V and Ostrum, E "A Political Theory for Institutional Analysis" in Butrico, F. A., Touhil, C. J. and Whitteman, I. L. (eds.) *Resource Management in the Great Lakes Basin* (Lexington, MA: Heath Lexington Books, 1971).

[73] Loftus, K. H., Holder, A. S. and Regier, H. A. "A Necessary New Strategy for Allocating Ontario's Fishery Resources" in Grover, J. H. (ed.) *Allocation of Fishery Resources* (Rome: Food and Agricultural Organisation, 1982): 255-264.

[74] Grima, A. P. and Allison, W. R. *Allocation of Fishery resources with Special Reference to the Great Lakes* Report to the Great lakes Fishery Commission, Ann Arbor, MI., cited in Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit.,

[75] The authors note that the property systems of these societies were already discounted for they were considered to be incompatible with the 'modern' society. See particularly; Rogers, G. W. "Alaska's Limited Entry Program: Another View" *Journal of Fisheries Research Board of Canada* 36 (1979): 738- 88.

[76] Reproduced from Grima and Berkes "Natural Resources: Access, Rights-to-Use and Management," op. cit., 44.

[77] Regier, H. A. and Grima, A. P. "Fishery Resource Allocation: An Exploratory Essay," *Canadian Journal of Fisheries and Aquatic Sciences* 42 (1985): 845-859

The following section reinforces this point and argues that appropriate development paths need to accommodate new approaches to the management of resources held in common. It is argued that new directions need to be explored and new institutions need to be developed, informed where possible by the wisdom of tradition. As a first step, it is suggested that efforts to introduce more 'appropriate' management systems should explore the 'third solution' to the commons dilemma and seek to establish frameworks that encourage cooperation amongst a community of users.

3.3 Traditional Resource Use Systems and Development Planning

> Common property regimes have the capacity to manage natural resources in ways that meet multiple criteria of importance to rural people. Efficiency, equity and sustainability appear to be optimised by resource poor rural communities dependent on collectively managed renewable resources. A significant measure of resource conservation for forests, range, water resources and fisheries is inherent in these management systems which have evolved to meet the direct needs of people in uncertain environments. For this reason alone, common property regimes are worthy of more careful analysis. The designers of new institutional arrangements for conservation and development need to be aware of the strengths and weaknesses of such regimes to guide their work. State and private property are not the property-right norms for many societies and they may not be the most appropriate foundations for future institutional arrangements.[78]

In the early 1990's, there continues to be a growing level of interest in environmental issues. As a result of the publication of the *World Conservation Strategy*[79] in 1980 and subsequently the report of the World Commission on Environment and Development entitled *Our Common Future*[80] in 1987, the literature on ecology, environmentalism and particularly 'sustainable development' has blossomed. Part of this explosion of interest reflects the growing realisation that the resources of planet earth are finite and that the exploitation of resources for the selfish benefit of mankind can not continue indefinitely. Another aspect is the growing understanding of global linkages and interdependence not only in the economic system, but also in ecological terms. The over-riding message of *Our Common Future* in particular was that the degradation of lands and resources in some far-off country could no longer be dismissed as irrelevant.

Many in the 'development field' have sought to understand these global linkages and identify the causes of resource degradation at a national, regional or local level. Gibbs and Bromley[81] offer one of many such perspectives that is particularly relevant to 'third-world' settings and identify three main 'classes' of resource degradation:

1. Deliberate conversion of natural resources to other forms of capital. Minerals, forests and fisheries are being mined or harvested for export sales to raise foreign exchange. This demand for foreign exchange creates competition for resources amongst governments, concessionaires and rural communities, as well as pressure to re-define property rights and acquire rents.

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[78] Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit., 31.

[79] IUCN *World Conservation Strategy*, op. cit.

[80] WCED *Our Common Future* op. cit.

[81] Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit., 30.

2. Redefinition of property rights. Resources nationalised in the interests of the state. Villagers have seen customary rights replaced, local organisations superseded and their incentives to conserve resources removed. Governments have acted as if they had the capacity to manage resources down to the local level. However, this has created conflicts between local and national interests which irrationally exploit in the absence of common property regimes.

3. Indirect degradation of natural resources often results from the unintended side effects of policies which appear to be unrelated. Most notable are the policies to develop commercial agriculture for food self-sufficiency or for commercial export in the irrigated lowlands. When agriculture cannot absorb increased population, because of mechanisation and capital intensification, individuals become marginalised and migrate either to the cities or the uplands. However, it is in the uplands especially that the institutional arrangements are least able to cope with sudden waves of immigration or inappropriate techniques. Upland resource use has until very recently, been guided frequently by custom, local institutional arrangements and individual membership in groups. Traditional upland production techniques have also evolved locally to promote sustainability in diverse and fragile environments. However, under pressure from population expansion, commercialisation of resource use and technical change, these local arrangements may adapt or disappear depending upon their usefulness in changed circumstances, their capacity to change and their resilience.

This analysis is particularly directed towards rural areas in underdeveloped nations but might equally apply to less exotic settings where the capabilities of local institutions have been overlooked, undervalued or undermined.[82] In any such context, the social fabric often has an over-riding influence on the response of local people to new initiatives. Development programs that deny the unique character of the context in which they work face certain failure. Berkes comments:

> In areas earmarked for development projects, the local people cannot be divorced from the social structures of which they are a part. The logical approach for development planners is to deal intelligently with existing community structures, including those for handling production and resource management issues. However, care has to be taken to put common property systems in their proper perspective when considering transferability from one area or resource type to another. Having developed within specific historical and ecological contexts, their strength is in their suitability for specific areas and resource types.[83]

Such analyses suggest that many of the assumptions of western-trained resource managers and development planners need to be rethought. In particular, there emerges a need to give traditional systems and local institutions more respect. Such efforts are already underway and even the largest international development organisations are beginning to shift their emphasis away from centralised planning of large-scale projects and are focusing on local-level projects and programs.[84]

However, new development approaches of this type require new attitudes by practitioners and sponsors alike. In some cases, a critical evaluation of the situation may indicate that traditional systems are no longer adequate to support integrated planning; in these cases fresh innovation and creativity is indeed required. In other cases a careful and detailed study of local systems of resource use and management may show that the importation of methods and structures from outside is not only unnecessary but may be highly inappropriate. Often what is required is the willingness to commit time and effort to the understanding of indigenous systems that may be unique. Berkes and Farvar offer an illuminating comment here:

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[82] See for example; Bodley, J. H. *Victims of Progress*, (Palo Alto, Calif.: Mayfield Publishing Company, 1982).

[83] Berkes, F. and Farvar, M. T. "Introduction and Overview," op. cit., 13.

[84] See particularly; McNeely J. A. and Pitt, D. *Culture and Conservation: The Human Dimension in Environmental Planning*, op. cit.

> To be sure, not all traditional practice is ecologically adaptive, and some practices and beliefs deserve to be abandoned. But the rejection of all traditional practice, including those of common-property systems that make ecological sense, is a case of throwing out the baby with the bathwater.... Just as traditional knowledge of medicinal plants is no longer taken lightly by medical scientists, traditional practices in common property resource management are taken very seriously indeed by many resource conservationists and managers. To learn from traditional uses however, it is necessary for scientists, economists and development planners to overcome the narrow technical perspectives of their disciplines and become sensitive to other world views.[85]

All too often, the choices and judgements required to achieve such sensitivity is far from straightforward. Understanding the cultural, economic and socio-political dimensions of a particular setting so that appropriate institutions can be rehabilitated, supported or created anew presents a major challenge. The likely costs of monitoring, enforcement and other transaction costs that determine the suitability of certain institutional arrangements are often unknown. As Grima and Berkes[86] note, especially in cases where resource availability is limited and equitable allocation becomes of prime importance, the preference of the analyst or practitioner may be more influenced by their personal ideology than by the flow of pure reason.

There are also a range of more fundamental implications of this kind of approach to development planning that may be less easily accepted. Many local systems are essentially informal and community-based and emphasising these 'grass-roots' institutions over larger government structures encourages political decentralisation and an increase in popular participation in decision-making. Promoting institutional innovation under these conditions may demand a willingness to accept that social system variation should be reflected in policy and administration. Though this may be a difficult pill to swallow for conventional bureaucrats and administrators, there is a strong argument to suggest that such a shift of emphasis is essential if the potential for local people to act as conservationists is to be realised.[87]

Critics of this kind of approach who feel uncomfortable with the notion of decentralisation and increasing reliance on tradition rather than the promise of 'high-tech' may be comforted by a longer-term perspective. Some authors, for example, argue that these recent trends are part of an historical sequence of development that is progressive and leads to wiser and more enlightened resource use. It is worthwhile examining such arguments in some detail for they provide a clear rationale for much of the work to follow.

3.4 An Historical Sequence: From Exploitation to Sustainable Use

Grima and Berkes[88] argue that the re-introduction of traditional systems in general and the rehabilitation of communal property systems in particular, is part of an evolving pattern of wiser resource management and use. They argue that the traditional institutions of communal management were progressively subsumed by the flooding tide of economic development and the pressures of colonisation. They list among these pressures the spread of capitalism, population growth, technological advances encouraging efficiency and the commercialisation of subsistence resources into export staples.

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[85] Berkes, F. and Farvar, M. T. "Introduction and Overview," op. cit., 14.

[86] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 42.

[87] Gibbs, C. J. N. and Bromley, D. W. "Institutional Arrangements for Management of Rural Resources: Common-Property Regimes," op. cit., 31. See also; Baines, G. B. K. "Traditional Resource Management in the Melanesian South Pacific: A Development Dilemma," in Berkes, F. (ed.) *Common Property Resources*, op. cit., 273-295.

[88] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 49-52.

However, as the demand for resources increased, harvest levels began to outstrip available supply and stocks of renewable resources started to collapse. Rogers[89] has noted how the salmon fisheries of the Pacific Northwest followed such a trend, with development-oriented fisheries replacing subsistence and expanding into less accessible areas and from the valuable to the least valuable species. In this fashion, area after area and stock after stock were depleted in a systematic fashion. This pattern, which Grima and Berkes refer to as *sequential development* typified not only the West coast salmon fishery, but also the Canadian fur-trade and much of the forestry industry. It is suggested further that this sequence can be generalised and is applicable to many settings:

1. Before any external influences disrupt them, traditional communal property systems provide for both sustainable use and for allocation of renewable resources. In most cases resource-use rules and resource-sharing rules are inextricably tied together.

2. As communal-property systems disappear with the creation of open-access, the traditional systems are undermined and may even collapse. Open access also leads to the ecological collapse of the resource. The resulting loss of resource rents forces a search for a solution to the commons dilemma which generally takes one of three forms:

    (i) Market solutions cannot operate successfully if the open-access condition persists. Thus, to make market solutions work, resource-use rights have to be made exclusive and transferable. This works well for resource settings such as agriculture, rangeland or forests but is more difficult to institute for fisheries and wildlife.

    (ii) Where market solutions are more difficult to institute, central governments assume control and regulate the resource (though in some developing countries resources have been declared state property and communal-property has been nationalised).

    (iii) The alternative solution to the commons dilemma is the redevelopment of communal property systems.

According to this understanding of resource use trends, the rehabilitation of communal property systems is the next logical step in development planning. Far from being the impractical dream of romantics, traditional practices appear to hold considerable potential for innovative approaches to complex resource management problems. Berkes quotes Gadgil who concurs with this view:

> The colonisation of the world by the dominant technological culture, pouring out of Europe is now nearing completion, and with this, traditions of sustainable use of biological resources and conservation of diversity are reappearing. They have re-emerged most readily in regions where the technological revolution was first completed.
> Thus the Japanese have successfully established highly sustainable use of their inshore fisheries, basing it on earlier communal controls by artisanal fishermen...
> The control over local resources is reverting to local people as resources are reduced to levels too low for profitable exploitation by those employing more sophisticated and hence expensive technologies.[90]

It should not be assumed that such initiatives are merely theoretical possibilities. Ruddle has documented how traditional property systems have been successfully re-introduced in Japanese fisheries.[91] Berkes[92] too has noted how traditional wildlife management systems have been introduced with partial success in Northern Canada. Furthermore, Grima and Berkes point out that the re-introduction of traditional systems is not limited to those regions where communities have maintained a strictly subsistence lifestyle. The Japanese example and a similar recent case in the Turkish coastal fisheries provide firm evidence of that fact.[93]

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[89] Rogers, G. W. "Alaska's Limited Entry Program: Another View," op. cit.

[90] Gadgil, M. "Diversity: Cultural and Biological," *Trends in Ecology Evolution* 2(12) (1987): 369-373; quoted in Berkes, F "Cooperation from the Perspective of Human Ecology," op cit., 83.

[91] Ruddle, K. "Solving the Common-Property Dilemma: Village Fisheries Rights in Japanese Coastal Waters" in Berkes, F. (ed.) *Common Property Resources: Ecology and Community-Based Sustainable Development*, op. cit.

[92] Berkes, F "Cooperation from the Perspective of Human Ecology," op. cit.

It must also be recognised that there is much room for flexibility and hybrid approaches. Traditional systems should not be portrayed as static, rustic or parochial systems that constrain innovation and creativity. Rather, there is a great potential for what might be called 'intermediate institutional arrangements' that encourage mutual obligations within a community, and yet exist *with* government support, *despite* government support or that may be created *by* government regulation; no one approach is exclusive. Indeed, if new approaches are to be truly successful, it is essential that they are modelled according to context.

Another critical issue should be recognised here. The transfer of a traditional system originally confined to a group with common culture and political structure to cross-cultural contexts where neither social culture nor political agenda's appear to be similar also presents a major challenge. It is largely untested ground but there appears to be room for hybrid approaches and for innovation.

Nonetheless, despite a growing respect for traditional practices and systems, the gap between communal approaches and market-oriented resource management is ever-widening. Grima and Berkes comment:

> ..there has been little progress in integrating community-level with government-level management measures. It may be argued that such integration may become even more difficult to achieve in the future because government-level and market-oriented solutions - such as individual quotas - create property rights for individual users, whereas local level management generally results in the creation of communal rights.[94]

Though this problem needs to be addressed and must be overcome if new initiatives are to enjoy success, there are numerous examples of traditional systems that have persisted and a number that demonstrate how communal systems have been restored. In particular, there is a considerable body of literature that documents the re-development of more appropriate local level institutions and a wide range of practical experience in the field of co-operative management. Though much of this co-management literature deals with a broader set of resource issues, and often deals with settings in which traditional systems are no longer apparent, many gain their inspiration from the kind of traditional communal property systems discussed here.

3.5 New Institutions, New Relationships: The Co-management Experience

There is a growing body of literature relating to the theory and practice of co-operative management, better known as 'co-management'. What is of particular relevance here is the body of experience regarding the creation, renewal or rehabilitation of local level institutions that this literature represents.

Co-management refers to institutional arrangements in which the government shares the management function with a wider community. Pinkerton[95] cites two recent definitions:

> Co-management systems set up a game in which the pay-offs are greater for cooperation than for opposition and/or competition, a game in which the actors learn to optimise their mutual good and plan co-operatively with long-term horizons.[96]

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[93] Berkes, F. "Local-level Management and the Commons Problem: A Comparative Study of Turkish Coastal Fisheries" *Marine Policy* 10 (1986): 215-229.

[94] Grima, A. P. L. and Berkes, F. "Natural Resources: Access, Rights-to-Use and Management," op. cit., 52.

[95] Pinkerton, E (ed.) *Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development* (Vancouver: University of British Columbia Press, 1989): 5.

[96] Axelrod, R. *The Evolution of Cooperation* (New York: Basic Books, 1984).

> Appropriate institutional arrangements change the legal structure of incentives and deterrents and allow a community of users to reduce the costs of sharing a common resource while capturing the benefits that accrue to wise collective users.[97]

Co-management initiatives are essentially attempts to (i) encourage community independence and self-reliance; (ii) provide support for more 'appropriate' management; and, (iii) counter conflict amongst stakeholders by establishing systems in which all resource users accept increased responsibility for management. Such arrangements seek to re-define the relationships between all the stakeholders so that incentives to work co-operatively are promoted and the conventional roles of manager and user as guardian and villain are revised.

For resource-dependent communities, especially those traditionally reliant on renewable resources, co-operative management holds much potential for community development, both in the more conventional sense of economic opportunities and in more creative ways; for example, through the building of new allegiances amongst competing resource users; by generating discussion about shared goals and aspirations; and by contributing to self-reliance and the assumption of increased responsibility in a local and regional context.

Goals of Co-Management

Pinkerton[98] has set out three primary goals for co-management; (i) that it provides a more appropriate management regime; (ii) that it provides for more efficient management; and, (iii) that it supports a more equitable arrangement amongst resource users and between users and any management group. These primary goals are supported by three subsidiary goals or processes; (a) co-management as a route to community development; (b) co-management as a route to decentralising decisions enough to address problems effectively; and, (c) co-management as a mechanism for managing the consent of resource users and reducing conflict through a process of participatory democracy. The emphasis attributed to any one of these goals or processes depends on the perspective. For example, a hunter clamouring for more say over seasonal closures which threaten their livelihood may stress the potential for a more participatory style of management. The government biologist, on the other hand, who sees the decimation of a resource by competing users may place more emphasis on the potential to reduce conflict and produce a more efficient working arrangement amongst conflicting users. Such adaptability may in fact be a large part of the magic of co-management.

In Canada, there have been a number of attempts to institute co-management, particularly in the North, where aboriginal groups have been vocal about their desire to retain a traditional lifestyle based on hunting and trapping.[99] Although there have been some notable successes, many critics argue that most programs do little more than offer resource users token involvement in decision-making.[100]

Nonetheless, there are a growing number of examples of co-management that provide a rich source of experience for the redesign of local and regional institutions. A recent survey of community-based resource management initiatives in Canada produced an impressive list of programs and research projects of this kind.[101]

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[97] Ostrum, E. "Collective Action and the Tragedy of the Commons" in Hardin, G. and Baden, J. (eds.) *Managing the Commons*, op. cit.

[98] Pinkerton, E (ed.) *Co-operative Management of Local Fisheries*, op. cit., , 5

[99] There is a rapidly growing literature in this field, which includes; Salisbury, R. F. A *Homeland for the Cree: Regional Development in James Bay 1971-1981* (Kingston and Montreal: McGill -Queen's University Press, 1986); Osherenko G., *Sharing Power with Native Users: Co-Management Regimes for Arctic Wildlife* CARC Policy Paper 5, (Ottawa: Canadian Arctic Resources Committee, 1988); Usher, P. *The Devolution of Wildlife Management and the Prospects for Wildlife Conservation in the Northwest Territories* CARC Policy Paper 3 (Ottawa: Canadian Arctic Resources Committee, 1986).

[100] An example of such "co-optation" is presented by Kearney, J. F. "Co-Management or Co-optation?: The Ambiguities of Lobster Fishery Management in Southwest Nova Scotia" in Pinkerton, E. (ed.) *Co-operative Management of Local Fisheries*, op. cit., 85-102.

Building New Relationships

Many such initiatives represent attempts by government to resolve persistent and aggravating management problems including inadequate local data, a lack of cooperation, limited funds for enforcement of regulatory approaches and conflict amongst stakeholders. However, the move towards co-management is often prompted by the resource users themselves who reject the prevailing management framework and challenge the authority of the management agency or its representatives. Pinkerton characterises this as a 'crisis of consent' and observes that it often requires such a catalyst to create the initial willingness on the part of the management agency to enter into more open-ended dialogue with the users.[102] Such a step often demands that all concerned overcome their entrenched perceptions of the 'other side' and re-define their roles. This is often difficult as officials are more familiar with bureaucratic decision-making processes. They often react to co-management initiatives defensively, perceiving them as an assault on their authority and a questioning of their legitimacy. As Pinkerton notes:

> The challenge for would-be co-managers is to restructure the perceptions of such bureaucrats by helping them see ways to incorporate other management structures into their hierarchy by indirect rule or by the devolution of authority.[103]

Such changes therefore weave together both psychological and political elements and co-management is often more to do with building or restoring cooperative *relationships* than re-designing management institutions. Pinkerton comments:

> Co-management is not only about new institutions, but more fundamentally about the new relationships resulting from them. Institutions and legal arrangements can only permit, support and create incentives for new relationships: it is the new relationships which generate the communication, trust and willingness to risk innovation which make the benefits of co-management actually materialise.[104]

Undoubtedly then, if co-management is to be embraced by all users and managers of the resource, it needs to offer more than merely the devolution of power to the local level. It needs to hold the promise of *better* management and *fairer* management if it is to be an attractive option for stakeholders who may be more accustomed to recurrent conflict, locked into entrenched positions and lacking trust or confidence in the 'other side'.

Overcoming the Hurdles

There is no doubt that co-management carries with it many significant political implications. Bureaucracies do not relinquish control readily and the sharing of power does not come easily. But if government agencies can be convinced that co-management offers significant benefits in terms of reducing the challenge to their authority and easing their own management problems, such psychological hurdles can be overcome. In some cases, in light of dramatically changed behaviour on behalf of the users groups, government agencies have been obliged to support co-management initiatives even when they may be initially reluctant to do so. As Pinkerton writes, when resource users start to contribute voluntarily to management activities:

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[101] Man and the Biosphere/UNESCO *Community-Based Resource Management in Canada: An Inventory of Research and Projects* (Ottawa: Canadian Man and the Biosphere Programme/Canadian Commission for UNESCO, 1989).

[102] Pinkerton, E. "Introduction: Attaining Better Fisheries Management Through Co-Management - Prospects, Problems and Propositions" in Pinkerton, E. (ed.) *Co-operative Management of Local Fisheries*, op. cit., 23.

[103] Ibid., 24.

[104] Ibid., 8.

> ..[resource users] can no longer be perceived as untrustworthy predators who would willingly decimate the resource for their own short-term gain. When [resource users] act as an organised, self-disciplined group establishing principles for managing its own affairs, including some self-sacrifice, bureaucrat's resistance to sharing power and responsibility is necessarily reduced. Officials' rationale for withholding power in these situations is seriously challenged and, if they remain entrenched in conventional stances, they may be shamed or manoeuvred into co-operation.[105]

In particular, when local groups demonstrate that they are willing to commit their own funds to assist in the management effort, the results can be dramatic. McCay[106] recounts how New Jersey clam diggers were able to draw government managers into a cooperative arrangement in this way and notes that it was the clammers' willingness to spend their own money on a re-seeding program that provided that first crucial step in the building of trust and the breaking down of fixed perceptions.

Local resource users may be more willing to contribute their own time, energy and funds if the returns from their efforts are local or regional. In the case of ocean salmon fisheries, for example, local habitat enhancement efforts promise little return to local fishers if the enhanced stocks are likely to be allocated away to other fishery groups out at sea. Pinkerton[107] and MacLeod[108] both note that this may in part account for the limited success of the Salmonid Enhancement Program (SEP) in British Columbia. In contrast, if local efforts can be seen to pay dividends for the benefit of the local community, then experience has shown that co-management arrangements seem to enjoy more success. This is partly because many communities, particularly those dependent on resources in the hinterland, have developed some affinity for their local area, and have more investment in the long-term future of their local area than in more hazy regional or national goals. Such 'commitment to place' may be the key to many of the successes of local co-management initiatives.

Government also gains from maintaining the viability of local resources and supporting the communities that depend on them. Pinkerton notes how local fisheries have long been recognised as buffers which keep communities free of crippling dependency on government support. Whether it be in the Canadian North, or on the West coast of British Columbia, many local communities view renewable resources as the secure portion of their economy which is able to carry them through the vagaries of commodity and labour markets.[109]

Co-management also has the potential to capitalise on the skills, knowledge and creativity of local people. Those closest to the resource often develop a refined understanding of the resource and accumulate a vast store of experience of the cycles and thresholds of supply. When government management decisions do appear to contradict the knowledge and experience of local users, the credibility of the management agency and its practitioners is often challenged. The result is often conflict. On the other hand, if co-management arrangements allow local, highly specific knowledge to be incorporated into decision-making, management efforts are not only less troubled, they are often more successful.[110]

Co-management often occurs in cross-cultural contexts and it is here that government managers have greatest difficulty in relinquishing control to an indigenous management system that they do not fully understand, or which appears to be loose and informal. The Cree in the James Bay area of Northern Canada for example, developed a 'self-regulating system' of wildlife management and established a long-term stable relationship to local stocks that allows a sustained yield.[111] Although this system was given full recognition and credibility by the comprehensive claims settlement in 1975, co-management has had only limited success. This partial failure can be attributed, in part at least, to the difficulty government managers have in accepting a system that is so dramatically different to their own. Pinkerton writes:

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[105] Ibid., 9.

[106] McCay, B. J. "Co-Management of Clam Revitalisation Project: The New Jersey "Spawner Sanctuary" Program," in Pinkerton, E. (ed.) *Cooperative Management of Local Fisheries*, op. cit., 103-124.

[107] Pinkerton, E. "Introduction: Attaining Better Fisheries Management Through Co-Management - Prospects, Problems and Propositions" in Pinkerton, E. (ed.) *Co-operative Management of Local Fisheries*, op. cit., 9.

[108] MacLeod, J. R. "Strategies and Possibilities for Indian Leadership in Co-Management Initiatives in British Columbia," in Pinkerton, E. (ed.) *Co-operative Management of Local Fisheries*, op. cit., 262-272.

[109] Pinkerton, E. "Introduction: Attaining Better Fisheries Management Through Co-Management - Prospects, Problems and Propositions," op. cit., 11.

[110] Ibid., 13.

> Self-managing systems such as that of the Cree... have been able to regulate, allocate and maintain adequate information, but it is not always apparent to modern governments how they do this. It is often difficult for government to believe that there may be viable management methods other than a particular hierarchical form of standardised procedures and use of expertise. Furthermore, a self regulated system such as the Cree's is not only far from the rational-bureaucratic management ideal, it also incorporates a system of beliefs and practices around which both the social system and the management system are structured.[112]

The Challenge and the Promise of Co-management

As Pinkerton comments, the challenge of co-management is to strike a balance "between the needs of local groups for self-determination and the needs of government to have some assurance that the resource is being well managed."[113] In the case of many migratory renewable resources such as wildlife and fish, there is a vital need for government to play the coordinating role between a number of groups or communities that depend on the resource. This in turn highlights that there is an appropriate level to which power over decision-making should be devolved; co-management does not necessarily imply that governments should simply hand over responsibility to the most local level.

There is also a need to resolve the thorny issue of allocation and it is here that co-management holds much promise. It is often difficult for government to allocate equitably amongst a range of competing user groups, each of which is clamouring for attention and pushing its own case. As Pinkerton notes:

> Lacking a rationale for allocating more to one group than another, government managers may follow the path of least resistance and respond to the largest and loudest lobby. Such a response is not necessarily the most desirable one for conservation or equity.[114]

There is a further difficulty here. In many resource sectors including fisheries, conventional management approaches to regulation rely on the market to redistribute the allocation of the catch by making quotas transferable. This denies the 'local-ness' of many fishers by assuming that they are free and able to move where the jobs or markets are available. Such an approach contradicts fishers' 'commitment to place' and misses altogether the possibility of employing local incentives to motivate users to care for the resource.

Co-management holds much potential for the management of renewable resources and there is a growing body of both theory and practical experience on which future attempts to introduce cooperative arrangements can rely. But it is still perhaps more of an art-form than a science and it is difficult to present a single, uniform recipe for success. In fact, it may be the very variability of co-management arrangements that ensures their success. Each arrangement can be carefully sculptured according to context and can be tailor-made to reflect aspirations and concerns of the local community. Only in this way can co-management claim to be truly 'appropriate'.

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[111] Various accounts of the Cree self-management system are give in; Berkes, F. "The Role of Self-Regulation in Living Resources Management in the North" in Freeman, M. M. R. (ed.) *Proceedings of the First International Symposium on Renewable Resources and the Economy of the North*, Banff, Alberta, May 1981, (Ottawa: Association of Canadian Universities for Northern Studies/Canada Man and the Biosphere Program, 1981); Salisbury, R. F. *A Homeland for the Cree: Regional Development in James Bay 1971-1981*, op. cit.; Berkes, F. "Common Property Resource Management and Cree Indian Fisheries in Subarctic Canada" in McCay, B. J. and Acheson, J. M. (eds.) *The Question of the Commons: The Culture and Ecology of Communal Resources* (Tuscon: University of Arizona Press, 1987); and Berkes, F. "Cooperation from the Perspective of Human Ecology" in Berkes, F. (ed.) *Common Property resources: Ecology and Community-Based Sustainable Development*, op. cit.

[112] Pinkerton, E. "Introduction: Attaining Better Fisheries Management Through Co-Management - Prospects, Problems and Propositions," op. cit., 14.

[113] Ibid., 14.

[114] Ibid., 20.

Nonetheless, there is much to be learned from experience, particularly in terms of process. Often, it is not so much the conceiving of a mutually agreeable solution that is the real challenge, it is the process of reaching of agreement that presents the real difficulties. Where parties are locked in conflict, each subscribing to their own unique perceptions, the first steps may be the most difficult; to use the parlance of the negotiator, it is not so much 'getting to yes' but 'getting to (and even staying at) the table' that is the most challenging. Dale[115] offers a particularly illuminating example from the aftermath of the Boldt decision (1974) Washington State and notes how the role of 'sponsors' or 'organisers' proved to be critical.

But perhaps the greatest lessons to be learnt in the field of co-management refer to the kinds of institutions that can be built and the new styles of management that emerge in these cases. By developing structures that encourage cooperation and mutual responsibility and penalise competition rather then encourage it, co-management has set a new tone for renewable resource management - a new ethos. It is here too that the overlaps between co-management and the communal property systems referred to above are most apparent. Co-management sets up a process of social-learning that is akin to the evolution of co-operative rules in a more traditional setting but its magic is that it compresses the process of learning required. If the conditions required for the evolution of co-operation are met (long-term investment, open-ended interactions, and communication) such systems can be not only more stable and more resilient, but are also potentially more efficient than other forms of management. Co-management offers real-life examples of building trust, sharing ideas and generating new values amongst a community of users who often appear at the outset to have irreconcilable differences. Such examples go a great deal of the way towards proving that the 'third solution' to the resource managers dilemma is both viable and practical and lends weight to the arguments of the critics that say Hardin's assertions are wrong.

3.6 Normative Criteria for Appropriate Co-operative Management Systems

The preceding sections have laid out the theoretical arguments behind the debate over common property and have indicated how different interpretations lead to various institutional frameworks for resource management. It has been argued that communal property systems represent a 'third solution' to the commons dilemma and that the rehabilitation of local institutions is a logical next step for development planners and resource managers alike.

The study now turns to a more detailed consideration of this theme. A case-study of renewable resource management is presented and the struggle to introduce a more appropriate management regime for a local clam fishery is described. This case study provides a real-life illustration of the problems facing conventional resource management and also provides a clearer picture of the opportunities and constraints encountered when trying to establish cooperative management based on traditional systems of communal property.

To provide some structure for the following chapters, prominent themes from the preceding sections are re-iterated below in summary form. These ten themes are drawn from the work of Berkes and Farvar, Grima and Berkes, Pinkerton, Gibbs and Bromley and other authors cited above and, collectively they set out the essential characteristics of what shall be referred to here as 'appropriate co-operative management'. The themes have been expressed in the form of normative criteria and together, they provide a checklist against which to assess the potential for a communal property system to provide the foundation for co-operative management.

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[115] Dale, N. "Getting to Co-Management: Social Learning in the Redesign of Fisheries," in Pinkerton E. (ed.) *Co-operative Management of Local Fisheries*, op. cit., 49-72.

1. Conservation of Ecological Integrity
   The management system must be able to protect (and where possible enhance) the resource base itself. All forms of degradation, either directly through poor practice or over-harvest, or indirectly through the creation of incentives to 'cheat' the system or through feedback effects from related use, must be prevented.

2. Management for Information
   The management system must encourage all users and co-managers to share data and increase the pool of available knowledge. In a manner akin to the process of social learning necessary for the evolution of traditional systems, trial and error should be encouraged, albeit tempered by adequate safety margins. Hybrid or experimental approaches should be sought that make the most of available scientific data but which incorporate local knowledge and experience. This may require considerable creativity and innovation and there must be a willingness to see beyond the boundaries of a particular discipline or method. Information regarding economic constraints and trade-offs should be made explicit and alternative options should be exposed. Information and ideas should be shared in order that goals can be clearly articulated.

3. A Community of Users
   The co-managers of the resource must be clearly recognisable. Without such clearly-defined membership, access equity will remain problematic. The spatial boundaries of the co-management area should also be identified. This encourages a sense of commitment to place and increases the sense of community. The membership should remain small enough to ensure effective communication and to nurture social cohesion.

4. Reciprocal Obligations
   The system should embrace an explicit and well-understood code of reciprocal obligations to guide the co-management effort. This should set out clear responsibilities for each co-user and should avoid relying on altruism. Such a code should be generated by the group and agreed to by all members. This code is essential for establishing trust amongst the group and for ensuring that commitment to co-management is maintained.

5. Allocation
   The management system should adopt a clear mechanism for the allocation of costs and benefits. Equitable allocation need not imply equal shares, but must be perceived to be fair. Specific details, such as what constitutes agreement (unanimity, majority, consensus) should be made explicit. The extent of rights and their transferability over time should also be addressed. It should also be made clear where ultimate control resides; either with the users themselves, at the level of an elected board or committee, or with some superior management body such as a government agency.

6. Enforcement
   A mutually-acceptable method of enforcement should be established. This should include details of how compliance will be maintained, how departures from the rules will be corrected and what sanctions might be imposed. The management system should not rely on altruism, nor portray each user as a potential villain, but should re-cast the roles of users as co-managers with an equally valid stake in the resource.

7. Dispute Resolution
   There should be an established process for the resolution of disputes. This process should be able to address disputes at any level; for example contraventions of harvesting rules, challenges to the established management procedures, grievances over unfair allocation, exclusion from membership, and access to policy-level decision-making. In the case of appeal, the relationship between this system and other structures (legal systems, government regulations) should be made clear. Mediated approaches should be used rather than arbitration to avoid unnecessary polarisation.

8. Community Development
The goal of local community development should be made explicit and should inform decisions regarding trade-offs at the local, regional or national level. The management system should seek livelihood security for all co-managers. Long-term goals should be established that are consistent with cultural and political aspirations. This demands that each management system should be carved out according to context and should not be imported. The management system should reflect local institutions wherever possible rather than develop them anew. A sense of ownership and local control should be fostered. The system should encourage the building of trust and commitment to the communal management. Higher levels of organisation should be developed and widespread communication of both facts and ideas should be encouraged.

9. Progressive Learning
The management system should move on from the recognition of a 'crisis of consent' to explore creative options for improved management. Informed debate over options should be seen as part of the process of mutual learning. Initial steps may require voluntary efforts but these may often contribute to the breaking down of perceptions and should not be seen as sacrifices. Long-term goals should be articulated and a process of creating 'visions' should be used as a means of exploring opportunities. The management system should address the need for continuing education of all participants through the regular dissemination of information and ideas. This becomes especially important in cross-cultural settings where world-views may be unfamiliar. This learning process may be enhanced by an individual playing the role of an 'energy-centre' from outside; a sponsor, organiser or other facilitator.

10. Adaptability
The management system should not be cast in stone but should remain adaptable and should be revised regularly. In this way, stability comes from flexibility. Experimentation should be encouraged which may require a large initial outlay of funds. It should also be accepted that many successful small steps may be more beneficial than ambitious leaps that enjoy only limited success. In this context, it should also be recognised amongst all stakeholders that because of established legislation and the fear of setting precedents, it is the government that may be the least flexible. New initiatives should therefore be presented in a way that does not prevent government from 'buying in'. The management system should anticipate dramatic change and should seek the organisational resilience to cope with such events.

CHAPTER 4:

CONFLICT IN THE WEST COAST CLAM FISHERY

This chapter presents a case-study of the clam fishery on the West coast of Vancouver Island and highlights some of the inherent weaknesses of the conventional approach to renewable resource management. Though of lesser economic importance in terms of contribution to gross regional product than other areas of the fishery, the clam fishery typifies many of the chronic problems that are common in other contexts.

An increasing number of individuals have entered the West coast clam fishery in recent years - both newcomers attracted by the low capital investment required and a strong and expanding market, and a growing number of recent immigrants from S.E. Asia who are familiar with this kind of fishing and who have eagerly responded to the opportunity to establish an economic base in their new homeland. This has resulted in rising numbers of diggers on the beaches and heavier and more competitive exploitation of the stocks. Though recent survey data is not conclusive, there now appears to be a general decline in stock levels that may constitute a serious conservation problem.

Many groups within the fishery are increasingly frustrated with the lack of response from the central management agency and have begun to articulate their dissatisfaction loudly and vigorously. In particular, Native Indian groups are incensed by the depletion of resources on land to which they claim aboriginal title. With increasingly large work parties of non-resident diggers ploughing up beaches 'right under their noses', some Native groups have resorted to confrontation. In the ensuing conflicts, some incidents have turned ugly and have even involved firearms.

The conflicts on the West coast are characteristic of many of the problems that plague conventional approaches to the management of renewable resources. This chapter identifies some of those flaws and argues for the introduction of more innovative management frameworks that encourage co-operation and the wider sharing of responsibility.

4.1 The Analytical Framework for the Case-Study: 'Frames'

There is a growing literature in the field of negotiation that examines the way conflicts emerge, the way the facts and values at issue become entwined, and the successes and failures of different processes established to resolve disputes. It is a relatively new field and there is not, as yet, a single accepted school of thought nor an accepted vocabulary. Consequently, there are many ways of describing the kind of conflicts that emerge.

One of the distinguishing features of the conflict on the West coast is the multiplicity of perceptions held by the various stakeholder groups and in order to address this issue directly, a framework for analysis is introduced that defines the conflict in terms of the respective 'frames' of the participants involved. The concept of frames has been developed most fully by Martin Rein and Donald Schön and it is their suggested vocabulary that is adopted here.[116]

Rein and Schön consider a particular set of conflicts which they refer to as 'stubborn policy controversies'. They write:

> ..stubborn policy controversies... tend to be enduring, relatively immune to resolution by reference to evidence, and seldom finally resolved... The careers of these controversies.. are not to be understood in terms of the familiar separation of questions of value from questions of fact. For the participants in them construct the problems of their problematic policy situations through *frames* in which facts, values,

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[116] Rein, M. and Schön, D. "Frame-Reflective Policy Discourse," (Unpublished manuscript, Massachusetts Institute of Technology, March 1986).

> theories and interests are integrated. Given the multiple social realities created by conflicting frames, the participants not only disagree with one another, but also disagree about the nature of their disagreements.[117]

Rein and Schön distinguish such 'controversies' from more straightforward 'disagreements' which arise within a common frame and can be settled in principle by appeal to established rules.

The process of reaching agreement often demands that the frames of each of the stakeholders involved in a particular dispute are recognised and that the area of overlap between frames is expanded. It demands that the way participants view the conflict, even the names they use to describe elements of it, are challenged and, if necessary, revised. Rein and Schön define such a process as 'frame-reflective policy discourse'. Ideally of course, frame-conflict is removed altogether, but particularly in cross-cultural contexts, such a process may require the melding of world-views and cultural norms - a process requiring generations rather than months or years. Part of the problem here is that in controversial settings, the participants often end up 'talking past each other', because each fails to understand or fails to appreciate fully the assumptions upon which their opponent's arguments are based. Rein and Schön refer to this as 'abnormal discourse', a term they attribute to Richard Rorty.[118]

Frame conflicts do not exist in isolation but lie at the centre of a set of 'nested contexts' which define what shall be referred to here as the 'contextual environment'. At least four nested contexts can be identified, each of which influences and is influenced by the other (see figure 4). The *internal* context is at the core and it is at this level that the policy, program, or in the case of co-operative management of resources, the management system, is in dispute. In most cases, participants are in conflict at this level. The *proximate* context is the policy environment, in which the management system is set. At this level, management system overlaps with other policies or programs and its stability or flexibility is often determined by these linkages. The next level in the nested set is the *macro* context. This level defines the overall direction of policies, and the condition of the economic and political climate. Shifts in this level may lead to substantial changes in the operation of the program on the local level, but can equally well lead to 'symbolic re-framing' in which the rhetoric of disagreement may change while the practice is apparently unaffected. The final level is the *global* context and it is here that changes in historical eras occur. An example of this might be the change from the blind belief in science and technology in the 1950's to the more sceptical attitudes of the '70's and '80's. While such changes may be apparent only in retrospect,[119] shifts in global context might be seen as "society's intuitive groping towards understanding in advance of the full development of societal change."[120]

The contextual environment is important because it establishes the setting in which conflicts arise. Conceptually, the linkages between each of these levels are also critical because shifts at these higher levels exert influence by changing the 'climate' within which a controversy may be occurring at the core. Rein and Schön write:

> [Policy controversies] tend to arise in connection with governmental programs, which exist in some policy environment, which is part of some broader political and economic setting, which is located in turn within an historical era. When some feature of the nested context shifts, participants may discover that the repetition of a successful formula no longer works. Then the perceived shift of context may set the climate in which [participants] try to rename a policy issue by renaming the policy terrain,

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[117] Ibid., 1.

[118] Ibid., 8. Much of the work on frame conflict revolves around the attempt to establish 'normal discourse' - an acceptable and mutually intelligible medium which can be used to resolve the dispute.

[119] Rein and Schön point out that "wisdom about an era comes only at its end." This is, as they concede, a cynical view "because it is exactly at the point when an era has passed away that we can no longer do anything about it." They also suggest that while this often true, "the ideas and symbols of a societies cultural system may prefigure changes in its social system before those changes are fully understood" (Ibid., 18).

[120] Ibid., 17.

reconstructing interpretations of how things got to be as they are, and proposing what can be done about them.[121]

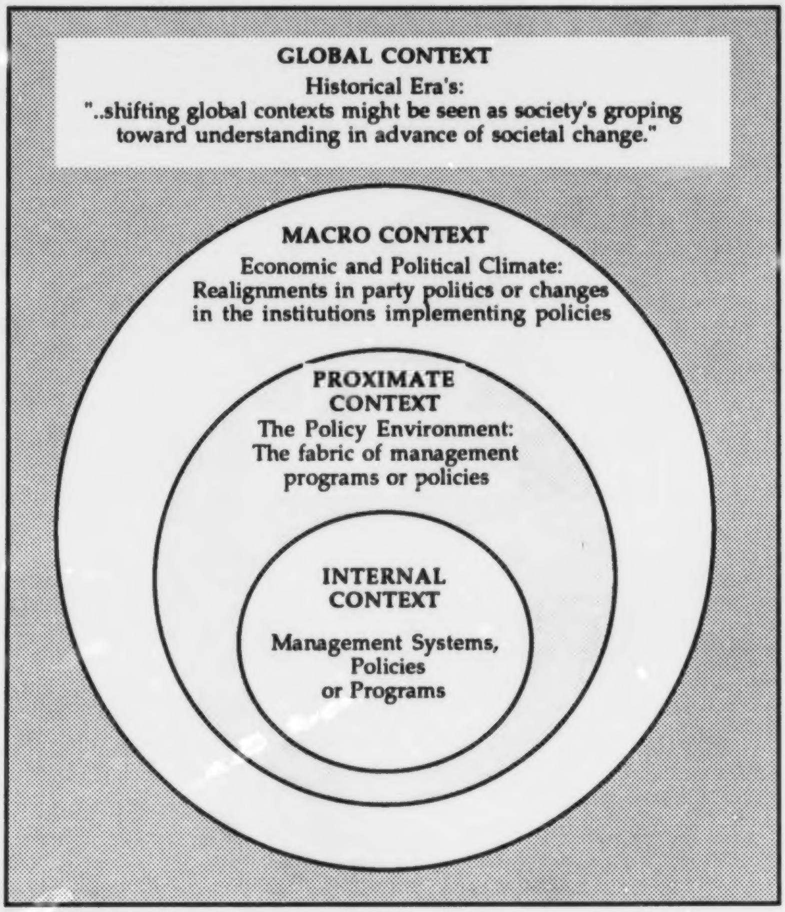
GLOBAL CONTEXT
Historical Era's:
"..shifting global contexts might be seen as society's groping toward understanding in advance of societal change."
MACRO CONTEXT
Economic and Political Climate:
Realignments in party politics or changes in the institutions implementing policies
PROXIMATE CONTEXT
The Policy Environment:
The fabric of management programs or policies
INTERNAL CONTEXT
Management Systems, Policies or Programs

Figure 4. A diagram showing the four levels of nested context that make up the contextual environment. After Rein and Schön, (1986:16)

Frame-conflicts present considerable epistemological challenges. For example, an analysis of frame-conflicts itself carries with it a frame! Similarly, the way an analyst chooses to define a particular problem and the kind of process established to resolve a dispute are themselves founded on a set of facts, values, theories and interests that are integrated; in many cases the boundaries of this frame may be least apparent to the individual or group that subscribes to it. Such difficulties raise the spectre of epistemological relativism and need not be of concern here, but what should be recognised is that many of the components of a dispute that need to be resolved are complex and intertwined.

Mason and Mitroff present a similar line of argument but introduce their own terminology. They refer to stubborn controversies as 'wicked problems' in which each of the elements overlap or influence others.[122] This leads to 'organised complexity', or what Trist[123] refers to as a 'turbulent environment'.

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[121] Ibid., 15-16.

[122] Mason, R. O. and Mitroff. I. I. *Challenging Strategic Planning Assumptions: Theory, Cases and Techniques* (Toronto and New York: John Wiley and Sons, 1981). The authors note that wicked problems exhibit a number of

In a manner similar to that in which Rein and Schön introduce the notion of frame-reflective policy discourse as a route to resolving such disputes, Mason and Mitroff suggest that resolution of wicked problems requires the "objectification" of information so that "the basis for each parties judgements may be exchanged with each other."[124] They go further and suggest that the forums required for negotiation should be 'participative' (all affected groups must be involved), 'adversarial' (recognising that opposition serves to clarify judgement, ensuring that doubt becomes the guarantor), 'integrative' (leading towards a unified set of assumptions and a coherent plan of action) and lastly 'managerial mind supporting' (acknowledging that the resolution of a wicked problem requires the re-formulation of participants' understanding and even world views - a process that needs to be supported actively throughout the negotiations).

The concepts of Mason and Mitroff are, in all but the finest detail, consistent with those of Rein and Schön. In either case, the process required to overcome frame-conflicts, or similarly to resolve wicked problems, relies in essence on what Friedmann refers to as *social learning*.[125] This process of 'learning-by-doing' iterates between the collective formulation of a new 'theory', through the development of 'strategy' and it's application and on towards the creation of a new understanding of the problem at hand. This process requires careful management and support and demands both imagination and patience. Rein and Schön refer to 'organisers' or 'sponsors' who can assist in the the task of illuminating the participant's frames not only for the benefit of others locked in the dispute, but just as importantly for the participants themselves. It is here that the discipline of mediation holds much promise and the involvement of such a figure (or figures) in controversies is gaining acceptance. The intricacies and nuances of different styles of the mediation process cannot be considered here, but the term 'mediator' will be used to refer to an organiser or sponsor who contributes to the process of re-framing and assist in the negotiation of agreement between parties locked in conflict.

The concept of frames and the vocabulary introduced here will be used as the framework for the analysis of the case study that follows.

4.2 The Commercial Clam Fishery on the West Coast

Six bivalves account for most of the commercial landings on the Northwest Pacific coast: the Pacific oyster, *Crassostrea gigas*, and five species of clams: butter, *Saxidomus giganteus;* littleneck, *Protothaca staminea*; manila, *Tapes philippinarum*; razor, *Siliqua patula*, and the geoduck, *Panope abrupta*. Compared to world landings, bivalve production in the Northwest is minor, only accounting for some 1.3% of world production in 1986. Of these landings, clams account for about 20%.[126]

Aboriginal groups on the Northwest coast have traditionally harvested the indigenous species of clams both for sustenance and for trade. Though the exact duration of their occupation is a matter of debate, it is clear that Native Indians have been using many species of shellfish for thousands of years and much archaeological research concentrates on the middens which are comprised of the discarded shells.

More recently, with the arrival of the European settlers in the region, a commercial shellfishery was established. For the most part, the shellfishery had the character of a 'cottage-industry' and provided

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characteristics, including the following: interconnectedness; complicatedness; uncertainty; ambiguity; conflict; and, societal constraints.

[123] Trist, E. "The Environment and System Response Capability," in *Futures* (April 1980): 113-127.

[124] Mason, R. O. and Mitroff. I. I. *Challenging Strategic Planning Assumptions*, op. cit., *14*.

[125] 'Social Learning' refers to a body of literature that relates how ideas and practice change in society. John Friedmann, in *Planning in the Public Domain: From Knowledge to Action* (Princeton: Princeton University Press, 1987) attributes the concept to the American philosopher, John Dewey, an advocate of "learning by doing".

[126] Bourne, N. "Bivalve Fisheries: Their Exploitation and Management with Particular Reference to the Northeast Pacific Region," in Jamieson, G. S. and Bourne, N. (eds.) *North Pacific Workshop on Stock Assessment and Management of Invertebrates, Canadian Special Publication of Fisheries and Aquatic Sciences* 92 (1986):2-13.

seasonal and part-time employment for those engaged in other sectors of the rapidly growing commercial fishery.

Between the 1950's and 1960's there was a general decline in landings of clams in B.C. but since then there has been a steady rise. Total commercial landings have fluctuated with the changing socio-economic climate and have ranged from 184t in 1952, to as low as 6t in 1960, and as high as 3839t (valued at $7M) in 1988. In recent years the Manila clam, *Tapes philippinarum* has emerged as the most important economic species, accounting for some 92% of the landed value of all intertidal clams in B.C. in 1988, and some 21% of the landed value of all shellfish for that year.[127] (See figures 5 and 6).

The Manila Clam, *Tapes philippinarum*

Manila clams are indigenous to Japan between the latitudes of 25° to 45° N and it is now believed that they were unintentionally introduced into B.C. waters with transplanted Pacific oyster seed. Manilas were first identified in Ladysmith harbour on the East coast of Vancouver Island in 1936 but spread rapidly throughout the Strait of Georgia and along the West coast of Vancouver Island. They first entered the commercial catch in 1941 and are now found as far north as Bella Bella and Queen Charlotte Strait.[128]

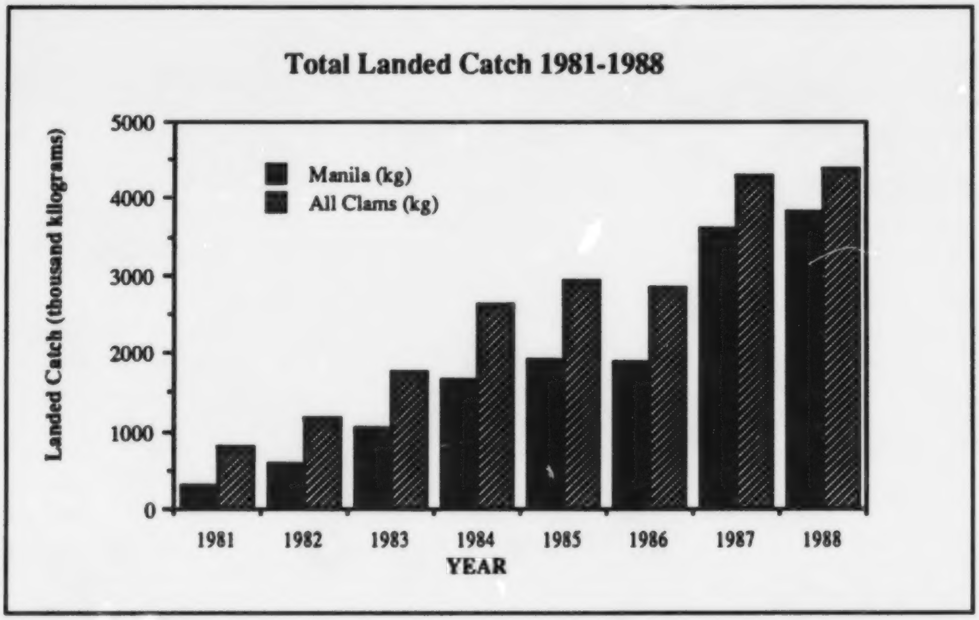

Figure 5. Graph showing the total landed catch of intertidal clams in British Columbia from 1981 to 1988. Note the increasing importance of the manila clam, *Tapes philippinarum*.

Manila clams have a two stage life cycle, with a larval stage of 3 to 4 weeks and a sedentary life in the substrate of up to about 15 years. (See figure 7). Research suggests that gonadal development only occurs above 12°C and that spawning is rare below 14°C. Although the waters in B.C. are further North than in Japan, mean temperatures are warmer allowing the species to become established.

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[127] Data from *1990 Intertidal Clam Management Plans*, DFO Pacific Region (1990); and, *DFO Statistical Yearbooks*.

[128] Information for this section comes from; Bourne, N. "Distribution, Reproduction and Growth of Manila Clam, Tapes philippinarum (Adam and Reeves), in British Columbia," *Journal of Shellfish Research*, 2(1) (1982): 47-54.

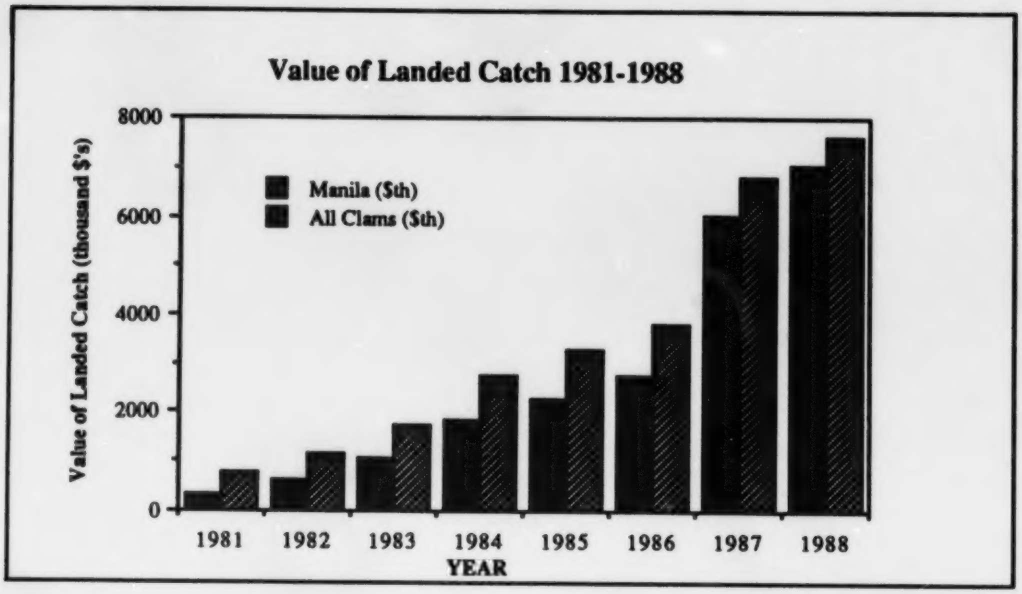

Figure 6. Graph showing the total value of the landed catch of intertidal clams in British Columbia from 1981 to 1988. Note the increasing importance of the manila clam, *Tapes philippinarum*.

During the larval stage of the life cycle, inshore currents can transport the pelagic larvae considerable distances and allow settlement on uncolonised beaches. In the Strait of Georgia, there is a strong counter-clockwise prevailing current and the species was dispersed rapidly throughout the area. However, manila clams did not become established north of Seymour Narrows or Yuculta Rapids. This is thought to be due to a thermal barrier at these points preventing dispersal into the colder waters further north.

On the West coast of the Island, manilas are thought to have been first introduced to Barkley Sound, again with imported oyster seed, although the exact date is unknown. Records show that they were well established there by the early 1950's and that they had spread at least as far as Esperanza Inlet by the end of that decade. (This rapid rate of colonisation may in part be due to the fact that manila clams appear to have occupied a vacant ecological niche). Inshore currents along the West coast have a net northerly flow and though the water temperatures here are lower than in the Strait of Georgia, mean temperatures range from 13° to 16°C, sufficient to permit larval development. Also, water temperatures within the many sounds and inlets along this coastline are higher than outside, particularly so during warmer summers.

Clams are found in a wide range of intertidal habitats although they are most prolific in locations where wave action is moderate, where the substrate is sand or light gravel and where primary productivity is high. Consequently, the most productive sites are often found near sources of freshwater on well-flushed but protected shelving beaches. Manilas occupy the mid to upper portion of the beach, settling in substrate to a maximum depth of about 10cm. Tidal amplitudes along the West coast range up to about 5 metres, resulting in a tidal zone which varies from just a few metres to 75 metres or more. These intertidal zones can be exposed to extremes of heat or cold and some biologists suggest that extended periods of freezing temperatures in particular cause heavy mortalities.[129]

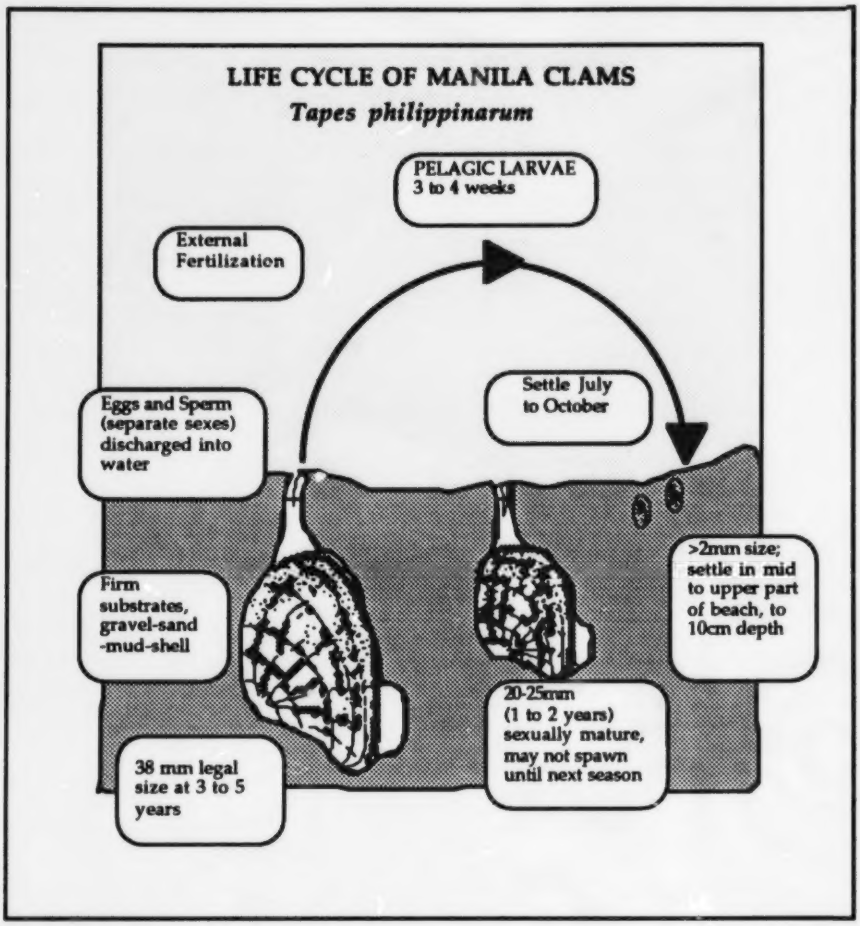
LIFE CYCLE OF MANILA CLAMS
Tapes philippinarum
PELAGIC LARVAE 3 to 4 weeks
External Fertilization
Settle July to October
Eggs and Sperm (separate sexes) discharged into water
>2mm size; settle in mid to upper part of beach, to 10cm depth
Firm substrates, gravel-sand -mud-shell
20-25mm (1 to 2 years) sexually mature, may not spawn until next season
38 mm legal size at 3 to 5 years

Figure 7. Life cycle of the Manila clam *Tapes philippinarum* (after Bourne, N. and Harbo, R. in *1990 Intertidal Clam Management Plans* DFO, Pacific Region.)

Spawning occurs in mid June in the Strait of Georgia and continues through into early September while on the West coast spawning may be delayed for a few weeks due to the lower average water temperatures. Each clam may produce many millions of eggs but large, consistent recruitment is rare due to heavy post-breeding mortality. Once settled in the substrate, the bivalves filter food through their retractable siphons. Growth rates, determined from measurement of the annual rings or 'annuli' on the shell seem to be closely related to water temperatures; in the Strait of Georgia it may take 3 to 3.5 years for clams to reach 'legal size' of 38mm while on the West coast this may take up to 4 years or more.

4.3 The Present Management Framework

The following sections present an overview of the management framework now in place for manila clams and highlight a number of generic problems.

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[129] Dr. Neil Bourne, Shellfish Biologist. Pacific Biological Station; (pers. comm.)

Some Particular Problems for Management

The characteristics of the life cycle of manila clams and the species' population dynamics give rise to a number of unique management problems.[130]

Firstly, though the species is sedentary for the majority of its life cycle, the high mobility of larvae has resulted in settlement in and amongst the many islands and inlets of the West coast. This high passive mobility does not result in a regular and widespread pattern of distribution as might be expected, but patchy and discontinuous settlement - a result of the variability of nearshore circulation currents. One consequence of this is that reliable estimates of total abundance are very difficult to determine and the study of population dynamics becomes speculative. For this reason alone, quota-based management is problematic on a coast-wide scale.

Secondly, harvesting effort is equally dispersed and tends to concentrate on the most productive areas. As a result, many yield-recruit modelling methods cannot be applied reliably because they assume random distribution of both stock and harvesting effort. Although information on many of the parameters is already available and though such methods may be applicable on a smaller scale, regional or coast-wide modelling efforts are impractical or, at best, of limited accuracy.

Thirdly, though fecundity is staggering, the DFO's leading biologists claim that heavy post-breeding mortality results in a population profile which is dominated by one or two strong year classes, followed by several years of low recruitment. They argue that this leaves managers with the problem of deciding whether to maximize the yield from strong year classes or manage more conservatively for a stable annual catch. Heavy mortality also tends to produce dramatic fluctuations in the available catch, although the prevailing wisdom suggests that high fecundity assures adequate recruitment even after heavy exploitation.[131] Other biologists dispute this point, arguing that population profiles in their surveys do not show strong year classes as predicted and that there is no evidence to suggest that managers are able to make decisions on a stock-by-stock basis, let alone at the level of a particular year class. Moreover, they argue that post-breeding mortality would have to be not only strong, but also highly variable to produce the irregular profiles which the DFO claims to observe. If this is the case, they contend, high fecundity would not assure adequate recruitment in the absence of some escapement management.[132] Without more detailed study and given the lack of more detailed information it is difficult to discount either point of view, although the apparent confidence of the DFO may be hard to support. It is clear however that this issue is the source of considerable antagonism.

Fourthly, the dispersed nature of the stocks presents a considerable problem for enforcement. Landings are irregular and can occur at any of the roadside beaches, inlets and harbours along the West coast. Monitoring of the catch on all beaches would be exorbitantly costly if not impossible.

Fifthly, clams periodically cause what is known as 'paralytic shellfish poisoning' (PSP) on an unpredictable basis. PSP is caused by the plankton 'protogonyaulax', which, if ingested by humans, produces a lethal neurotoxin inhibiting nerve impulses. Regular samples have to be taken throughout the coast as PSP can occur on a highly localised area of a few kilometres and closures have to be introduced quickly in order to prevent outbreaks of poisoning.

Finally, the B.C. clam fishery has historically employed many people, particularly those in the lower income brackets on a seasonal or part-time basis. Relaxed management policies have tended to maintain these employment patterns even though this may be less economically efficient than widespread harvesting with mechanical diggers; high employment rather than maximum yield sometimes appears to be a major goal of management. Moreover, there is a general perception that anyone has an inalienable right to take clams for their own use and benefit. Clams are considered to be 'common property', free goods available for all and sundry to make use of at their will. Attempts to introduce restrictions on harvesting are often met by vocal and active opposition.[133]

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[130] Bourne, N "Bivalve Fisheries: Their Exploitation and Management with Particular Reference to the Northeast Pacific Region," in Jamieson, G. S. and Bourne, N. (eds.) *North Pacific Workshop on Stock Assessment and Management of Invertebrates, Canadian Special Publication of Fisheries and Aquatic Sciences* 92 (1986):9.

[131] Dr. Neil Bourne has gone as far as to suggest that there are no recorded cases of fisheries having any appreciable impact on long-term recruitment levels of intertidal clams. From a meeting with Dr. Neil Bourne and others, offices of DFO South Coast Division, Nanaimo, 26th March 1990

[132] Mr. Bill Green, Fisheries Policy Advisor, Nuu-Chah-Nulth Tribal Council; (pers. comm.).

Options for Management

Given the range of particular problems mentioned above, Bourne[134] reviews a variety of techniques that have been employed in the North Pacific for the management of intertidal shellfish:

1. Unrestricted Fishing. This often occurs when the fishery first opens up but is usually replaced by some centralised management regime.

2. Size Limits. This is the most common management approach. Limits on the minimum size of the clam's shell for harvesting can, in theory at least, ensure that an individual breeds at least once before harvesting and can be designed to permit optimum yield per recruit. In addition, enforcement is more practical as checks can be made not only on the beaches but also at the point of sale, at the processing plant and even immediately prior to export.

3. Gear Restrictions. This is generally used to minimise damage to sub-legal size breeding stock and to prevent damage to the substrate environment. Mechanical shellfish diggers are used elsewhere in the Northeast Pacific, but in B.C. hand digging has remained the preferred method.

4. Quotas. Quotas can be applied on a per trip or a per area basis and both methods have been used. The chief problem with this approach is that stock assessments are very costly and time consuming. Such management overheads may not be justifiable for small-scale commercial fisheries.

5. Limited Entry or Controlled Effort. This method is often used in conjunction with quotas and is now applied in other sectors of the West coast shellfishery (for example, the geoduck fishery). The problem here is that fishing power and effectiveness often continue to increase resulting in higher levels of harvesting effort despite regulations.

6. Seasonal Closures. This method is used to protect spawning stocks or occasionally to reduce effort where enforcement is problematic.

7. Reserves. Reserves are used to ensure an adequate breeding stock. This approach has not been a common practice in the Northeast Pacific largely because fecundity is high and adequate recruitment seems to be assured even from a small breeding population.

Given these options, management in B.C. has adopted the simplest and least costly combination of methods. At the present time, clam management relies on a legal size limit of 38mm for manilas and littlenecks, 63mm for butters and 90mm for razors, although there is an established margin for error and up to 7% of the catch can legally be of a smaller size. The rationale for this approach is that size limits allow clams to breed at least once after they reach sexual maturity. In addition, a legal size limit allows management to support the economic needs of the processing industry by ensuring that the clams harvested are of the most profitable size.

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[133] Ibid., 10.

[134] Bourne, N "Bivalve Fisheries: Their Exploitation and Management with Particular Reference to the Northeast Pacific Region," op. cit., 10. See also; Bourne, N. "A Review of Management Options and the rationale for Size limits in British Columbia's Commercial Fisheries for Intertidal Clams" in Harbo, R. and Jamieson, G.S. (eds.) *Status of Invertebrate Fisheries off the Pacific Coast of Canada (1985/6): Proceedings from the Shellfish Stock Assessment Sub-Committee Meeting, September 2nd - 3rd, 1986, Canadian Technical Report of Fisheries and Aquatic Sciences* 1576 (1986):123-132.

The legal size limit is applied in conjunction with occasional closures for conservation reasons. The last seasonal closures were removed in 1966 and 1967 in an attempt to assure a year-round supply for the export steamer market although over recent years, management has not always managed to meet this goal and openings have generally been limited to the winter months. Annual quotas have also been introduced on a number of occasions in an attempt to deal with persistent tensions between recreational and commercial diggers. This method was implemented on a trial basis on Savary Island in 1978, but catch levels were consistently above the quota and the approach was rejected in favour of the more simple size limit. Daily quotas remain in place however, for all recreational clam diggers.

Existing Licensing Regulations

Clam fishers wishing to harvest stocks for commercial sale are required to hold a 'Z' licence, issued by the DFO, in addition to their personal commercial fishing licence (PCFL). The 'Z' licence costs $10.00 and the PCFL costs a further $10.00 (or $40.00 for 5 years). To date there is no limit on the number of individuals that can hold a 'Z' licence.

In 1989, area-specific licences were introduced in an attempt to reduce the level of effort. Each licence now permits digging in just one of six areas up and down the coast[135] and openings are staggered. In addition, periodic closures occur due to PSP or contamination from other sources.

A number of further handling regulations are in place. Harvested clams must be cleaned and clearly 'tagged' on the beach and sales slips, similar to those used in other sectors of the commercial fishery, have to be completed for all commercial catch.

The Advisory Process

In 1986, DFO initiated the development of an advisory process for all sectors of the fishery. This was in response to continuing tension in many sectors and increasingly strident calls for participation in decision-making.[136]

Traditionally, DFO[137] had some contacts with the processing sector through production management (risk control for PSP, inspection of size limits) but had limited contact with other groups. Therefore, the development of a process for the invertebrate fishery commenced in March 1986 with a questionnaire sent to industry and clam diggers' associations to solicit their input on the design of a suitable mechanism for more widespread and systematic input. Following this, in the spring of 1987 a proposal was submitted to the Pacific Area Regional Council (PARC), an autonomous group advising the DFO Minister and senior officials on policy. A subsequent proposal was also sent to the Commercial Fisheries Industry Council (CFIC), a body whose role is to provide information and advice to both the public and to the Federal and Provincial governments. In October 1987 a proposed committee structure was sent to fishing organisations and in February of 1988 each one of five 'sectoral committees' for the invertebrate fishery held their first meetings. The role of the five sectoral committees[138] is set out in a DFO document:

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[135] The six areas are: A. North Coast (Area 1.) razor clams only; B. Johnstone Strait (Areas 11, 12, 13); C. Sunshine Coast (Areas 15, 16, 28, 29 with limited openings in certain sub-areas); D. Upper Strait of Georgia (Areas 14, 16-19, 16-20); E. Lower Strait of Georgia (Areas 17, 18, 19, 20 and 29-5); F. West Coast Vancouver Island (Areas 23 to 27).

[136] Some critics have argued that the West coast fishery suffers from chronic management problems. See for example; Marchak, P., Guppy, N. and McMullan, J. (eds.) *Uncommon Property: The Fishing and Fish Processing Industries in British Columbia*, (Toronto and New York: Methuen, 1987).

[137] The Fish Inspection Branch of the DFO assumes the responsibility for the inspection of all clams under agreement with the provincial government.

[138] The five sectoral committees for shellfish are; (i) Intertidal Fisheries Sectoral Committee; (ii) Shrimp Trap Sectoral Committee; (iii) Crab Trap Sectoral Committee; (iv) Net Fisheries Sectoral Committee; and, (v) Dive Fisheries Sectoral Committee.

> ..to provide a forum for the expression of views of representative fishermen and fisheries organisations and for the building of industry consensus on annual domestic allocation by gear type, on operational management issues, and on policy and program initiatives.[139]

While the advisory process is considered by DFO to be generally "working well"[140], within the clam fishery it is admitted that there is a problem with representation of diggers who are often not affiliated to a particular group or organisation. There has also been some difficulty involving Native groups from the West coast. The Nuu-Chah-Nulth Tribal Council for example, have been reluctant to participate because they feel the process does not accommodate their needs nor address some fundamental issues of management jurisdiction and aboriginal rights.

4.3 Conflicts in Area 26: Kyuquot Sound

On the West coast of Vancouver Island (statistical areas 23 to 26), the clam fishery has been the setting for increasing conflict over the last few years. The main source of tension has been the increasing number of diggers on the beaches and the growing fear that stocks are being seriously depleted, perhaps beyond recoverable levels. In particular, there have been a number of confrontations between large parties of diggers of S.E. Asian descent and Native Indian residents who feel that over-zealous harvesting is not only threatening the stocks, but is also an affront to their aboriginal rights to renewable resources. In a number of cases, confrontation has resulted in ugly incidents, some involving firearms. Though the introduction of area-specific licensing regulations in 1989 has reduced the numbers of diggers on the beaches[141], the situation is still tense and threatens to erupt at any time.

The Nuu-Chah-Nulth Tribal Council, which represents Native Indian Bands throughout the West coast, has been calling for an immediate closure of all clam beaches. They argue that the present management regime has failed to protect the stocks, that data are chronically lacking and that the efforts of DFO to enforce their regulations are hopelessly inadequate. In an attempt to demonstrate the immediacy of the problem, some Bands completed their own surveys and in Area 26 (Kyuquot Sound), managed to secure a closure for conservation reasons. (See figure 8).

These conflicts on the West coast highlight a number of important issues, in turn reflecting the characteristic problems facing conventional resource management. Firstly, there is pervasive uncertainty leading to a lack of confidence in the management approach as a whole. Not only is biological data unavailable, but the political and legal context is also unclear. Each group subscribes to a different frame - a particular view of the conflict that in many cases reflects their own biases as much as objective facts. The area of overlap between the frames may be limited and the struggle to reach agreements is much hampered as a result. Secondly, as a result of the casting of adversarial roles, there is a chronic lack of communication both between managers and users and amongst the various user groups themselves. Although the advisory process brings players to the table on a regular basis, some groups are not prepared to participate and others are poorly represented. Persistent tension and ugly confrontations have resulted in a stalemate situation in which no group trusts another and most are unwilling to enter into dialogue for fear of inflaming the issue.

The following section examines the conflict in Area 26 more closely and illuminates both the different perceptions of each of the players and the lack of reliable scientific information.

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[139] Excerpted from; DFO Needs a Consultative Process (Vancouver: DFO, draft version, dated January 22nd 1988).

[140] Interview notes: interview with Ms. Frances Dickson, Regional Shellfish Co-ordinator, DFO offices, Vancouver, 3rd May 1990.

[141] One interviewee claimed that the numbers of diggers on the most productive beaches had occasionally risen as high as 150 or more. Since the regulations have been introduced, this number has fallen to a more reasonable 30.

Multiple Players, Multiple Frames

There are a number of key players involved in the clam fishery in Area 26 and this section defines the conflict on the West coast in terms of the multiple frames to which they subscribe. The sub-sections below provide a profile of each one of the stakeholders who are presently involved (or who might become involved if the management regime was to be revised), describes their role, their management goals, their perception of the conflict and their relationship with other players.

(A) DEPARTMENT OF FISHERIES AND OCEANS (DFO)[142]

The intertidal shellfishery on the West coast is managed on behalf of all Canadians by the federal Department of Fisheries and Oceans. As mentioned above, the legal foundation for this responsibility

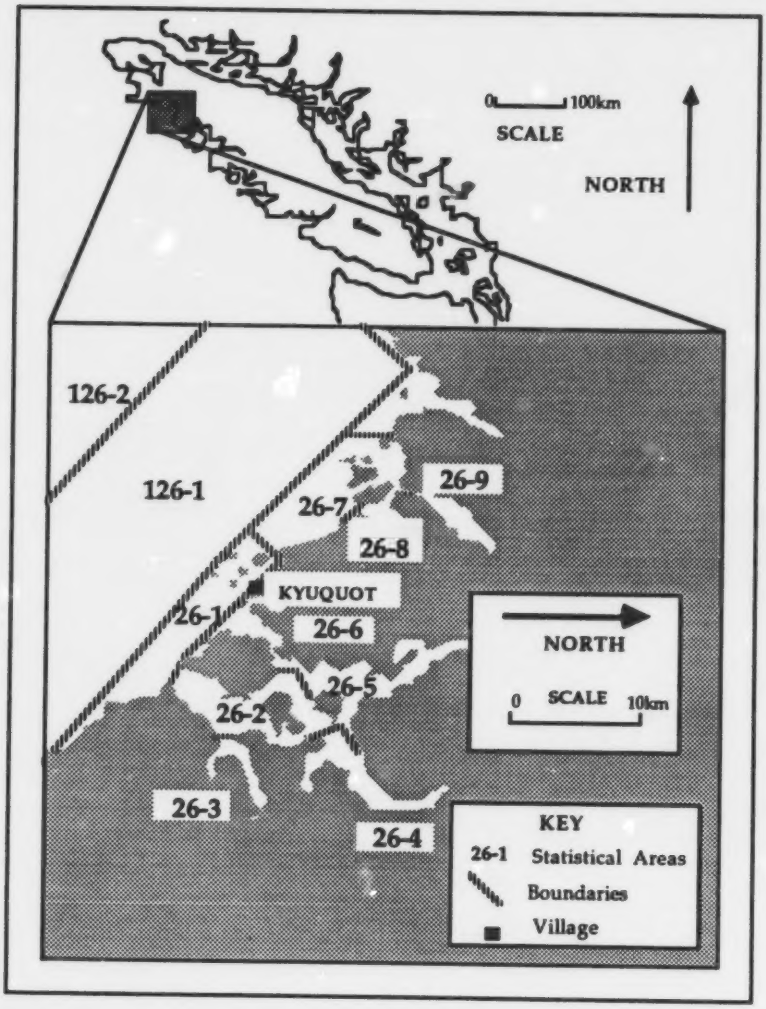

Figure 8. Sketch map showing the location of DFO Statistical Area 26 (Kyuquot Sound) and the boundaries of management sub-areas.

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[142] Material for this section is drawn from a series of interviews with representatives of the DFO, including: Rick Harbo, Shellfish Biologist, South Coast Division (Nanaimo, 26th March 1990); Ed Lockbaum, Associate Area Manager, South Coast Division (Nanaimo, 26th March 1990); and, Frances Dickson, Regional Shellfish Co-ordinator (Vancouver, 3rd May 1990).

can be traced back as far as the British North America Act (1867), but more recently the Fisheries Act (1970), supported by the Constitution Act (1982). Research complementing the management effort is provided by the Biological Sciences Branch, located at the Pacific Biological Station in Nanaimo.

The prime objective of the Pacific Regional Office of DFO is "to manage, conserve and enhance the tidal and anadromous fish stocks of British Columbia and the Yukon Territory for the greatest possible benefit from the renewable fishery resource".[143] The DFO has also articulated a number of goals as strategic priorities[144], which include:

- developing a long range strategy to encourage sustainability and increased competitiveness in the fishery;
- implementing a strategy to promote growth in oceans-related industries;
- continuing to achieve demonstrable "fairness" both in processes and outcomes in all fisheries management and inspection.

For shellfish, the specific goals of the management plan are stated as:

(i) To ensure the conservation and protection of shellfish stocks coast-wide through the application of sound management principles.
(ii) To ensure the optimal use of shellfish stocks in order to meet social and economic objectives of the people of Canada.
(iii) To develop fishing plans consistent with principles of conservation through a consultative process with users of the resource.
(iv) To preserve, enhance and protect critical aquatic habitat.
(v) To optimise the quality of shellfish harvested.

The DFO is a conventional resource management agency first and foremost and though its staff have considerable experience dealing with recurrent political tension, they are undoubtedly better equipped to deal with the technical aspects of managing a renewable resource.

The DFO's management framework for intertidal clams is well established and until recently, they claim, appears to have been working well. Though casting the players in the stereotypical roles of villain and guardian, the DFO contends that the management goal of optimum use for social and economic objectives has been achieved. In particular, the economic return from the fishery has continued to climb as the price for clams rises. However, with the dramatic rise in the number of diggers on the beaches and with alarming reports of confrontations between Native Indians and non-resident diggers, managers and policy-makers alike admit that there is now a need to reduce harvesting effort.

What the DFO biologists are less willing to concede is that there is an immediate need for widespread closures on the West coast for conservation reasons. They claim that the stock levels are so variable that the reported shortages could simply represent a natural fluctuation or the result of heavier fishing 'creaming-off' the accumulated stock of a non-exploited population. They accept the legitimacy of the surveys completed by some of the Native bands, but argue that they may not be representative of the area as a whole. Moreover, given the stormy political climate and controversial nature of the aboriginal land question, they are reluctant to introduce closures for fear of some groups interpreting the move as an attempt to re-allocate the catch to Native Indian groups who would continue to take clams for their subsistence needs.

Management staff readily admit that funds are limited for enforcement and at present there are just two fisheries officer for Areas 25 and 26, both located in Tahsis. But they also point out that the overall value of the fishery simply may not justify higher management costs.

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[143] *Commercial Fishing Guide for Shellfish and Minor Finfish Species* Department of Fisheries and Oceans - Pacific Region, Canada, 1990.

[144] *Strategic Priorities 1990*, DFO, Canada.

The relationship between DFO and Native Indian groups varies up and down the coast, reflecting more often than not the relationship between the local fisheries officer and the band council. At more senior levels however, there is a general perception that the management proposals put forward by some of the Bands are attempts to reaffirm ther former control they feel they once fheld over this fishery. There is also frustration with some Native bands over their lack of willingness to truly participate in the advisory process. It is felt that this undermines the success of what could become a positive and productive initiative. As a result, the DFO feels that many management issues are often re-framed as sovereignty issues and are reluctant to take initiatives that may create the impression amongst other groups that the DFO is over-extending its policy mandate.[145]

The relationship between DFO and non-native clam diggers is less well defined. Though the introduction of area specific licences has reduced the total number of diggers, there is still a significant proportion who are not represented by any recognised body or organisation. Though some clam diggers' associations participate in the advisory process, and most diggers come into contact with fisheries officers at some time or another, many individuals have no formal contact with DFO management staff.

The contacts between processing firms and the DFO have until recently been restricted to the inspection of catch. With the advent of the advisory process, more detailed discussions have ensued and both parties concede that they have gained a better understanding of each other's interests.

(B) PROVINCIAL GOVERNMENT INTERESTS[146]

Though the management of marine fisheries falls under the jurisdiction of the federal government, intertidal areas fall into the often-hazy area of legislative overlap between the two levels of government. This is particularly so in the case of foreshore leases for shellfish which is presently guided by an agreement signed by both governments in 1986 (and updated in 1988).[147]

Although in most cases the federal department only concerns itself with imports and exports of shellfish, the wild clam fishery is managed entirely by the DFO under an agreement with the provincial government. Even in the case of aquaculture enterprises licensed by the province, the final product ultimately passes through one of the registered processing plants and is inspected by the Fish Inspection Branch of the DFO. The provincial government has therefore little direct involvement in the clam fishery, but any developments that overlap with its jurisdiction would necessarily require its involvement .

(C) PROCESSING FIRMS

The processors represent the industrial interests in the clam fishery. The B.C. Intertidal Clam Processors Association comprises of some 20 members with some 10 companies operating on Vancouver Island. As an indication of the size of the industry, the association's representative estimated that the price paid in 1989 by the firms for the landed catch amounted to something in excess of $10 million.[148]

The goal of the association is 'the better management of the shellfishery' and industry's chief concerns are (i) to maintain a high quality product for export; and, (ii) to encourage a stable but expanding fishery to support economic growth. In particular, the processors have a vested interest in a secure supply and would welcome a reduction in tension that would make their access to the catch more certain.

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[145] From an interview with Ed Lockbaum, Associate Area Manager, South Coast Division (Nanaimo, 26th March 1990).

[146] Information for this section was provided by Frances Dickson, Regional Shellfish Co-ordinator, (Vancouver, 3rd May 1990).

[147] In fact the foreshore leases are issued by Crown Lands and the aquaculture licence itself is issued by the provincial Ministry of Agriculture and Fisheries.

[148] Information and quotes for this section have been drawn from a tape-recorded interview with Mr. Stan Fuller, representative of the B.C. Intertidal Clam Processors Association (Nanaimo, 15th May 1990).

The processors have welcomed the advisory committee and are pleased that the DFO appears to be responding to some of their concerns. However, they still feel that they are able to exert only limited influence over closures and have even less access to real decision-making power. Moreover, they feel that their opinions are often overlooked because the government simply responds to the most vigorous lobby and because the committee is dominated by the strident voice of West coast Native groups who are supposedly there only as observers. One of the chief concerns that the processors have tried to put forward through the committee is the issue of year-round openings. They are pushing this issue because their workforce is often made up of part-time diggers who need to be employed for at least 20 weeks in order to claim unemployment insurance. Without this security, processors can not be assured of a regular (and therefore stable) workforce.

The association supports the concept of limited entry, for it is believed that this would add stability and certainty to the fishery. They have welcomed the introduction of specific area licences but would be uncomfortable with more stringent regulations that might incur higher costs. It is also felt that the level of enforcement is inadequate and that there is a lack of reliable information for sound management. They argue, for example, that the DFO is unwilling to open up prime shellfish areas north of Vancouver Island because they simply do not have the resources to supervise an expanded fishery.

The processing sector holds to the view that much of the recent tension on the West coast has been caused by casual or part-time diggers. These 'night-riders' they argue, have little long-term investment in the industry and dig clams only as a way of supplementing their income during leaner periods of the year. They suggest that it is these people, out to make a 'fast and easy buck', that have been the cause of many of the problems.

While agreeing that there is a serious conservation problem in some areas, processors challenge some of the more spectacular stories of depleted stocks. In some cases, they claim that 'truck after truck of clams' continued to arrive at the processing plant from areas that were supposedly stripped bare. One representative estimated that Area 26 produced in the range of 10,000 lbs of clams per month in the last open season and though they agreed that the present closure was needed for conservation, they would be more ready to accept continued closures if survey data was more available.

Many processors view the increasing numbers of diggers of S.E. Asian descent with favour; they indicate that over recent years this group has proved itself to be a hard-working and reliable workforce willing to dig for clams in all weathers and under any conditions. In contrast, they view Native Indian diggers as a far less reliable source of supply. They described incidents where arrangements had been made for the pick-up of clams at remote locations which fell through because Native diggers simply did not turn up.[149] Given high transportation costs, such incidents put further strain in the relationship between the processors and Native groups.

More importantly, some representatives expressed the view that the biggest stumbling block for management of the clam fishery on the West coast is land claims. They feel that Native Indians are refusing to participate in the advisory process as a political strategy which is ultimately aimed at securing 100% control of the fishery. This tactic of 'holding out' is perceived to be unreasonable and obstructive. In particular, many processors have great difficulty with the notion of a recently introduced species of clams being part of an historical claim to property.

Some processors also suggested that Indians control up to one third of the intertidal beaches already because of the location of their reserve lands.[150] They would resist the idea of a greater share being allocated to Native groups for fear that Indians would then control a disproportionately large share of the harvest. In particular they fear that this might jeopardise their access to a stable and reliable supply.

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[149] A similar incident was described very differently by members of the Kyuquot band. See section "(G) KYUQUOT NATIVE TRIBE" below.

[150] Although a number of the most productive clam beaches in Area 26 do lie on reserve land, it is not possible to substantiate or reject this assertion without a more detailed inventory of clam stocks on the West coast as a whole.

Finally, some processors admitted that they had little knowledge of the traditional importance of clams and other intertidal shellfish in the diets of Native people. Although many have talked to Native Indians on an informal basis there is a lack of willingness to discuss the tensions within the shellfishery more formally for fear of inflaming the issue.

In general then, while many processors feel that the management framework has been significantly improved, they still feel it is less-than-adequate.

(D) BUYERS[151]

The buyers are the 'middlemen' in the shellfishery, purchasing clams from diggers on the beaches and transporting them to the processing plants. Until a few years ago, a number of buyers were independent operators but now all are attached to one or other of the processing plants. The exact details of this attachment are not always clear. Given these close links, it is not surprising that many buyers share similar perceptions and views.

Some buyers are ex-diggers and identify strongly with the concerns and interests of that group. In a number of cases, buyers act in a supervisory role for a crew of diggers and have invested in expensive boats ($75, 000 in one case). However, the recent introduction of area specific licences now means that an individual digger can only work in one of the six areas - with the result that operators who act in a supervisory role now have difficulty maintaining a regular working crew as a separate group of diggers is required for each area. This has caused economic hardship in some instances, and for this reason alone, more stringent regulations would be unpopular.

Buyers now have a number of seats on the advisory committee although they may represent the interests of diggers as well as their own. In general, their positions seem to be closely aligned with the processing firms. Relations with Native groups are uneasy as a result of a number of incidents of confrontation. Little more than casual and irregular contact is maintained between these two groups.

(E) NON-RESIDENT CLAM DIGGERS

This group is poorly identified due to the lack of any systematic representation of casual or seasonal diggers. Some diggers work directly for buyers in work teams, and may therefore have indirect ties with a specific processing firm. In other cases, diggers operate independently although they may have well established arrangements with a particular buyer.

In the 1988/1989 season, some 1870 clam licences were issued for B.C., with 441 issued for the West coast. Up to half of these diggers may not have been affiliated with a recognised body or organisation. In the 1989/1990 season, with the introduction of the area-specific licences this number has fallen to 635 (as of February 1990) with 212 issued for the West coast.[152]

The primary goal of this group is assumed to be a regular and steady source of income. This demands easy and certain access to the beaches and well established arrangements with buyers. Any confrontation with residents of the West coast that interferes with their work, would clearly be viewed as unwelcome.

Many non-resident clam diggers feel strongly that they have a legitimate right to a share of the harvest. Clams, like many other commercial catches, are considered to be common property and they feel that access to such 'free goods' should not be obstructed. As a result, they strongly resist the idea of allocating a larger share to Native Indians, particularly of 'imported' species such as the manila clam. This would be simply seen as unfair and would be interpreted as an unreasonable political move to wrestle power away from other groups.

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[151] Information for the following two sections is drawn form a tape-recorded interview with Mr. Loi Truong. representative of the Nanaimo Clam Harvesters Association (Nanaimo, 15th May 1990).

[152] Data supplied by Ms. Frances Dickson, Regional Shellfish Co-ordinator, DFO, Vancouver.

(F) NUU-CHAH-NULTH TRIBAL COUNCIL (NTC)

The NTC represents members of the fourteen Native Indian Tribal Nations that inhabit the West coast from Sheringham Point, north of Port Renfrew, to Cape Cook, with a total membership of some 5400.[153] The political positions of each of the member bands have not always been identical, but the tribal council provides a forum for the reaching of consensus and enjoys considerably more influence in regional affairs as a result.

The NTC filed an aboriginal land claim for their traditional territories which was accepted as legitimate by the Federal government in 1983. Provincial officials have since estimated that this claim covers some 6000 sq.km. of land but this figure does not include the intertidal areas and large tracts of inshore waters that are also part of the Nuu-Chah-Nulth's claim. The Tribal Council's stance on this matter has been described as marked by a strong desire to reach a just settlement that ensures no private interests are displeased and they articulate a willingness "to share resources on a consultative basis" with other interests.[154]

To date, the federal claims process has not addressed their claim and the NTC share the frustration of other Native groups who are also 'waiting in line'. Furthermore, the process itself is viewed with some suspicion by many Native groups. This is because the federal claims policy seeks to come to some final agreement over jurisdiction and rights and would in most cases extinguish aboriginal title.[155] This is rejected by many Native Tribal Councils who argue that aboriginal title cannot be extinguished and that such an approach is inconsistent with their status as sovereign nations. They argue instead that the claims policy should be revised to pre-empt settlements and explore how the two systems of jurisdiction, one Canadian, one Native, can interact. This would have the added advantage of shifting the emphasis away from the possible redistribution of land and resources, which often engenders fear in the non-Native community, to a forward-looking cooperative exploration of the possibilities for co-existence.[156]

More recently however, the progress of the federal policy has been overshadowed by a series of major court rulings refining the definition of aboriginal title and setting major precedents for access to and use of natural resources.[157] These rulings follow on from the landmark Calder v. R. case of 1974 and the recognition of aboriginal title in section 35(1) of the Canadian constitution in 1982. The most recent of these, and perhaps the most significant, is R. v. Sparrow case which was decided by the Supreme Court of Canada in May 1990.[158] The ruling of the Supreme Court indicates firstly that aboriginal title cannot be considered to have been extinguished by regulations and furthermore, that these rights should not be considered to be static historical rights with little applicability in the modern day:

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[153] The fourteen tribes are the Ahousat, Ditidaht, Ehattesaht, Hesquiat, Kyuquot, Mowachat, Nuchatlaht, Ohiaht, Opetchesaht, Sheshaht, Tla.O.Qui.Aht, Toquaht, Uchucklesaht and the Ucluelet.

[154] See Cassidy, F. and Dale, N. *After Native Claims?: The Implications of Comprehensive Claims Settlements for Natural Resources in British Columbia* (Lantzville, B. C./Halifax, N. S.: Oolichan Books/Institute for Research on Public Policy, 1988):218.

[155] See MSS 1986 *Comprehensive Land Claims Policy* Published under the authority of Bill McKnight P.C., M.C.P., Minister of Indian Affairs and Northern Development, Ottawa; Ministry of Supply and Services, Canada.

[156] This point of view was articulated clearly and strongly by many of the Native Indian leaders at the recent conference entitled, "Reaching Just Settlements: Land Claims in British Columbia," held at the University of Victoria, 22nd - 23rd February 1990. Many of these speeches are now available on tape.

[157] "Cases which the crown (Fed and/or Prov] has lost in the last 6 years and which point to the continued existence of aboriginal title in BC include: Meares [1985] 3 WWR 577; Guerin [1984] 2 SCR 335; Deer Island 15 BCLR (2d) 165; the Pasco injunction 67 BCLR 76; the Westar injunction (part of the Gitskan Case) 37 BCLR (2d) 352; Saanichton [1988] 1 WWR 540; Bartleman 55 BCLR 78; Jules v. Harper Ranch [1988] BCWLD 1886. There have been no significant losses, from the point of view of legal precedent on the Indian side during the same period." Woodward J. "Legal Aspects of the Settlement Process" Address delivered to the Conference "Reaching Just Settlements: Land Claims in British Columbia", University of Victoria, 21st Feb 1990.

[158] R. v. Sparrow [1990] S.C.J. 49; Quotes for this section are drawn from the preliminary version of the final ruling of the Supreme Court.

> An existing aboriginal right cannot be read so as to incorporate the specific manner in which it was regulated before 1982. The phrase "existing aboriginal rights" must be interpreted flexibly so as to permit their evolution over time.[159]

and;

> ..historical policy on the part of the Crown is not only incapable of extinguishing aboriginal right without clear intention, but is also incapable of, in itself, delineating that right. The nature of government regulations cannot be determinative of the content and scope of an existing aboriginal right.[160]

Secondly, the court made it clear that aboriginal rights are different in character to the conventional (or as the judges refer to them 'traditional') property rights as conceived in present economic systems and common law. The ruling indicates that it is the Native peoples' own concept of property rights that should be accepted:

> Fishing rights are not traditional property rights. They are rights held by a collective and are in keeping with the culture and existence of that group. Courts must be careful to avoid the application of traditional common law concepts of property as they develop their understanding of the "sui generis" nature of aboriginal rights. While it is impossible to give an easy definition of fishing rights, it is crucial to be sensitive to the aboriginal perspective itself on the meaning of the rights at stake.[161]

The court also addressed the issue of the justification of regulations that may infringe on aboriginal constitutional rights, including those referring to resource management. Here the ruling rejects the use of the notion of "public interest" arguing that it "is so vague as to provide no meaningful guidance and so broad as to be unworkable". At the same time however, the ruling argues that the management and conservation of the fishery "is consistent with aboriginal beliefs and practices and indeed with the enhancement of aboriginal rights". While conservation is a goal which all native groups would support, the ruling may have overlooked the fact that the management *methods* employed to achieve conservation may themselves be inconsistent with aboriginal property rights. This issue needs to be resolved.

The Sparrow decision has encouraged Native groups to put forward their own visions of renewable resource management that are consistent with their beliefs and traditions. The NTC has grasped this opportunity and is presently engaged in preparing a number of management plans for different sectors of the fishery. With this kind of legal imperative supporting them, they believe that their claims to special status and increasing influence over management decision-making should be acknowledged by all parties as legitimate.

The NTC's specific management goals for the clam fishery have been clearly spelt out in a series of press releases and statements. In January 1990, the NTC demanded the closure of all clam, gooseneck barnacle and mussel fisheries "because we can no longer stand by and watch our resources being stripped and our rights being denied". They also rejected the licensing arrangements which require Native Indians to hold a 'Z' licence for commercial shellfish harvesting, arguing that this "flies in the face of our aboriginal title and rights".[162] The NTC has also called for the formulation of an intertidal shellfish management plan in cooperation with the Regional Director of DFO to address their concerns over the alienation of their lands through the leasing of beaches for shellfish farming.

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[159] Ibid., 2.

[160] Ibid., 16.

[161] Ibid., 3.

[162] NTC "Nuu-Chah-Nulth tribes demand extended closure of commercial clam, mussel and gooseneck barnacle fisheries," Draft press release 24th January 1990.

These statements highlight the growing discontentment with the present management framework for the intertidal shellfishery. The NTC feels that management is unable or is unwilling to respond to what they believe is an immediate and serious conservation problem and is reluctant to take any positive steps to resolve the present conflict. This in turn, reflects a long history of tension and conflict with the department who are perceived to be locked into a scientific mind-set and who seem to be unable to appreciate many of the social and political dimensions of fisheries management. Despite this, and though tensions continue, at the local level there is often more productive interaction, and face-to-face discussions between the DFO and NTC member bands have resulted in a number of pilot training programs. In addition, the NTC offered to host a conference on 'joint management'[163] earlier this year, though it was later postponed due to difficulties over scheduling.

The NTC has drafted its own comprehensive shellfish management plan which not only establishes their stake in the resource conflict, but also sets out a series of more detailed goals and objectives including the protection of shellfish habitat, maximising sustainable yield and equitable allocation amongst all residents of the West coast as well as between these residents and other interests. The management plan argues strongly for 'management for information' and expresses a willingness to discuss this with the DFO, but maintains that it should be the NTC that retains the responsibility for licensing Native diggers. (This position reflects the belief of the NTC that the introduction of many licensing arrangements in other sectors of the fishery have repeatedly been to the disadvantage of Native people. This is because many Native fishers are less willing to roam up and down the coast but remain closer to their traditional territories and thus effectively miss out on openings in more distant areas.)

This management plan also reflects a consistent trend in the political and cultural aspirations articulated by the NTC - they are unwilling to discard the lessons of their elders and are reluctant to pursue development options that contradict, or which appear to contradict their cultural norms and values. This is not only evident in resource management but can be seen in the council's recent attempts to take on greater responsibilities for health care in their communities in ways that are more consistent with their traditions. Though this kind of approach does not exclude conventional economic development planning, it is apparent that the NTC views their heritage as the most appropriate vehicle for future development and have shown a willingness to commit considerable funds towards research in these areas.[164] This approach is shared by other tribal councils elsewhere in B.C. (such as the Haida or the Gitskan-Wet'Suet'en) but is very different to the approaches taken by the Tribes south of the border in Washington State; here it appears that the settlement of claims based on treaty rights (the Boldt decision, 1974 and 1979) has been followed by development planning along more 'mainstream' economic trajectories.[165]

Contacts with other groups in the shellfishery have been limited. Relations with the processors and buyers are restricted to observer-status participation in the advisory process and often appear to be strained. Informal contacts between Native people and diggers continue on the beaches in areas that remain open, although here too, previous incidents have left their mark and relations are coloured by suspicion and unease.

(G) KYUQUOT NATIVE TRIBE (KNT)

The Kyuquot Native Tribe comprises some 200 members and is the northernmost band of the NTC. The KNT is actually made up of both the Kyuquot and Checleset peoples, covering the area from Cape Cook to just beyond Rugged Point at the south end of Kyuquot Sound (see figure 9).

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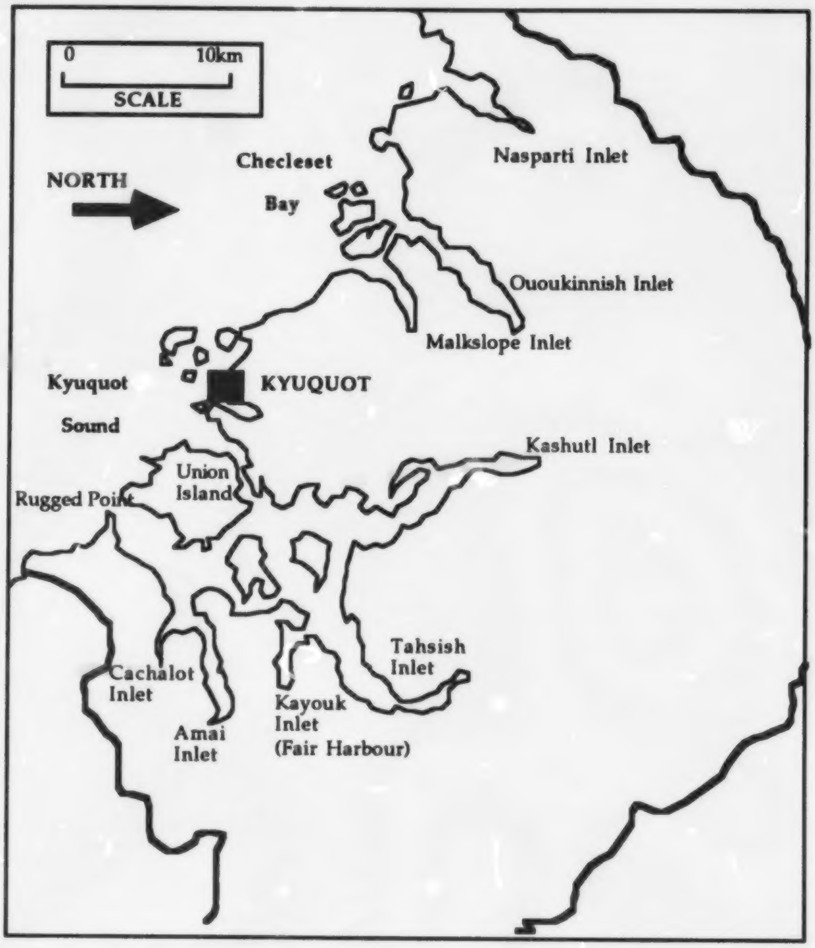
[163] The NTC also prefers the term 'joint management' rather than co-management, because it connotes a more equal sharing of the responsibilities for decision-making.

[164] For example, a recent proposal valued at several hundred thousand dollars was considered by the NTC for field research into traditional resource use systems and their implications for future land and sea claims.

[165] The developments that have followed the Boldt decision have been monitored closely by tribal councils in B.C. and elsewhere in Canada. The NTC have visited Tribes in the Puget Sound area and have gained from the American experience of co-management in particular. Despite this, it seems that the tribes in the U. S. A. have been more acculturated in the great 'American melting pot' than Tribal Nations in B.C. and have followed development paths that are less coloured by traditional culture. I am grateful to Mr, Bill Green for pointing this out.

The KNT has traced its history in this area back for many thousands of years. Traditionally made up of many individual villages located at the mouths of the areas majors rivers, the band now lives both on the Houpsitas reserve opposite Walters Island, and on Aktis Island just offshore.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Union
Island
Rugged Point
Tahsish
Inlet
Cachalot
Inlet
Amai
Inlet
Kayouk
Inlet
(Fair Harbour)

Figure 9. Sketch map showing the traditional territories of the Kyuquot Native Tribe. Note that the territories extend out to sea for some considerable distance although their exact boundaries have not yet been mapped. Note too how these territories overlap almost identically with the boundaries of DFO Statistical Area 26, shown in figure 8 above.

The economy of the band revolves around the fishing industry and the band holds 15 commercial licences for salmon and herring. In the last few years, the band has also opened a motel for the growing tourist industry. Despite these initiatives, like many Native communities on the West coast, the band is heavily dependent on transfer payments and is coping with a number of introduced social problems, including alcoholism, substance abuse and the general malaise that is born of welfare dependency. For this reason alone, the band is keen to develop a renewed sense of self-reliance, self-determination and pride in their community.

The KNT shares much in common with the NTC and their goals for the shellfishery are similar. They seek above all recognition of their aboriginal title, secure access to their traditional territories and a stable economic base for future development that is consistent with their political and cultural aspirations. Particularly because of their remote location, future developments for the band will almost certainly be linked to renewable resources.

The KNT is pushing strongly for what they term 'holistic resource management' that integrates all sectors of resource use in a fashion more akin to their traditional views. They are particularly concerned by the continued logging of their land by the 7 forest companies operating in their area and are active supporters of the efforts of the community's environmental group, the Kyuquot Economic and Environmental Protection Society (KEEPS). The band has recently commissioned a major inventory of their local area and now holds a set of 10 detailed maps covering land-use, land tenure, forest cover, forest cutting history, spawning streams, heritage sites and tourism opportunities. With these maps in hand they are actively exploring the possibilities of community-based resource management.

The KNT's relationship with the DFO has been shaped particularly by their positive relationship to individual representatives of the department. This is largely a result of the band's chief and the band council, but is also due to the attitudes of the local fisheries officer and the regional staff. As a result, where other bands have been forced or have chosen to adopt a confrontational stance, the KNT has been able to pursue a more co-operative approach and has developed a good working relationship with departmental staff. This has resulted in a number of training programs for band members and the establishment of the Kyuquot Native Tribe Fisheries Management Crew. It was largely due to survey data collected by this crew that the KNT managed to convince the DFO to close Area 26 in December 1989. This positive relationship becomes more strained however, at senior policy levels and the KNT shares many frustrations with the NTC.

Few formal links exist between the KNT and other sectors of the shellfishery other than through informal contacts on an individual basis. Relations with buyers are strained largely as a result of the buyers' apparent reluctance to buy from members of the tribe. One person recalled an incident where band members arrived at a pre-arranged rendezvous at Fair Harbour, only to discover that the buyer refused to purchase, preferring to wait for non-resident diggers to arrive with their catch. Such stories directly contradict the buyers contention that Native diggers are less reliable.[166]

Like the NTC, the KNT views the dramatically increasing numbers of diggers as a direct threat to the stocks and has completed a number of surveys to substantiate their belief. Band members recount many incidents where large numbers of diggers have 'strip-mined beaches of all clams', leaving the foreshore areas 'looking like a battlefield'. Such experiences have generated anger and have fuelled resentment which is particularly directed towards diggers of S.E. Asian descent.

With the closure of Area 26, the situation is 'on hold', but the KNT believes the stocks on their beaches have been seriously depleted and would resist vigorously any move to re-open the clam fishery in this area. What they are more interested in, and what they have committed more time and energy towards, is some form of co-operative management, involving both local residents of the West coast and those from outside. In connection with this, the band has been engaged in the preparation of a draft management plan which builds on their traditional resource use system[167] and which recognises their special status as aboriginal people.

(H) COMMUNITY OF KYUQUOT

The community of Kyuquot comprises some 250 people, including both members of the Kyuquot band living on Houpsitas reserve, and non-Native people living across the small cove, on Walters Island. Many of the non-Native residents have been in Kyuquot for a number of generations and have a strong sense of commitment and attachment to the area.

The local economy is based on fishing and its fortunes have followed the rise and fall of the industry as a whole. In the middle part of the century, an active fishermen's co-operative was established in

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[166] See footnote 149.

[167] The term traditional resource use system is used here rather than the more inclusive 'communal property system' because it implies a subset of a more comprehensive system of property rights. Field research concentrated on resource use practices alone and the use of this more qualified term implies that the Kyuquot communal property system is far more elaborate in scope.

Kyuquot and though this has now closed, many local residents are still involved in the troll fishery. The community has a school for the 70 or so children, a post-office, store and a community hall. Fresh supplies arrive on the weekly freighter and there are regular floatplane flights from Tofino and Gold River.

The community of Kyuquot is very closely knit. Despite the fact that the Native residents live separately on the reserve, all members of the community shop at the post office and store, share the simple facilities of the small hospital, send their children together to school on the Houpsitas side of the cove and work beside one another on fishing boats or in the woods. The uncertain future of land claims continues to fuel the concern of non-Native residents, but recently the KNT hosted a community meeting on this issue to discuss the future and lay some unjustified fears to rest. In addition, the widespread clearcutting of the forests all around the village has prompted collective action, resulting in the formation of an environmental group, the Kyuquot Economic and Environmental Protection Society (KEEPS).[168] This organisation boasts some 60-80 members and a board made up of both Native and non-Native directors. This organisation plays a vital role in bridging the gap between the two sides of the cove, has contributed to the breaking down of stereotypical perceptions of each other (held by Natives and non-Natives alike), and has encouraged the building of mutual trust.

A number of non-Native residents dig for clams, either on a recreational basis for personal use or as a minor commercial venture. Though not a major player in the recent conflicts, the community therefore has a vested interest in future development particularly with regard to the KNT's moves to encourage community-based resource management.

(J) OTHER INTERESTS

There are a number of minor players who have not necessarily had a role to play in the conflicts over the shellfishery but who might become involved in future developments. These include tourist operators who are drawing increasing numbers of visitors to the area each year, other environmental groups that are becoming more active in their support for the efforts of KEEPS[169], the 7 forest companies operating in the area who would keep a very close watch on any developments that directly or indirectly affected land tenure and a number of fish farmers that might be affected by the introduction of new management regulations.

Each of these players holds to their own views and perceptions and at present there is no mutually acceptable process to bring them together. One of the key issues that emerges in this conflict is the uncertainty over aboriginal title and the special claims of Native Indians to the land and resources. The legal and political environment continues to evolve and though much could be achieved by disseminating more accurate and detailed information, this issue is unlikely to be fully resolved in the immediate future.

The second persistent source of antagonism is the widespread belief that stocks on the West coast are seriously depleted. The next addresses this latter concern and reviews the available biological information.

Stock Depletion on the West Coast: Real or Imagined?

A number of surveys have been completed on the West coast, by the Kyuquot Native Tribe Fisheries Management Crew, by the Fisheries Management Team of the Ahousat Band Council and by DFO field staff. These surveys have either been based on random plot sampling along the tide line[170] (DFO surveys in particular) or systematic sampling methods covering larger areas of the intertidal zone.[171]

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[168] I am indebted to Mr. Tom Pater, resident of Kyuquot and member of the Board of Directors of KEEPS, for providing valuable information and comment for this section. See also "Goals and Objectives of the Kyuquot Economic and Environmental Protection Society for the West Strathcona Area" June 1st 1990; available from KEEPS, Kyuquot, B. C. V0P 1J0.

[169] For example, the Sierra Club helped to fund the publication of a four page newspaper in June 1990, documenting the clear-cutting of forest lands in the Kyuquot area and calling for a halt to destructive forest practices.

The NTC and DFO management biologists met in the spring of 1990 to review the results of the beach surveys in Areas 23 to 26 and to try to resolve the uncertainty over stock levels in a technical forum free from political manoeuvering. Unfortunately, the meeting rapidly dissolved into rancorous challenge and counter-challenge over the interpretation of the available data and little progress was made. A number of the graphs that were reviewed at that meeting have been reproduced below. (See figures 10 to 15).

Figures 10 and 11 show the results of surveys completed by DFO in Area 24. The NTC argues that these graphs show stocks of legal size clams, and in many cases undersize clams, to be declining rapidly. The tribal council's draft management plan concedes that similar trends occur when exploiting an un-fished or lightly exploited stock, but they argue there is no evidence in these graphs to assure them that stock levels are still above that required to obtain maximum or optimum sustainable yield.

The results of surveys in Area 25 are less clear although the tribal council still maintains that significant trends can be discerned. Stock levels in Laurie Creek (figure 12) have fluctuated considerably over the last few years although the 1989 data show that levels of both legal size and sub-legal clams appear to be severely depressed. The data from Little Espinosa Inlet (figure 13) shows a more consistent decline of both size classes. There is less detailed data available from Area 26. (See figure 14). The results of the 1989 surveys show stock levels that are generally lower than other areas but without time-series data it is only possible to speculate whether this represents a declining trend or whether it simply reflects lower levels of production form the colder northern waters. When the data are pooled (figure 15), the mean density of manila clams in Area 26 does indeed seem to be lower than other areas, although the levels of undersize clams appear to be dramatically higher.

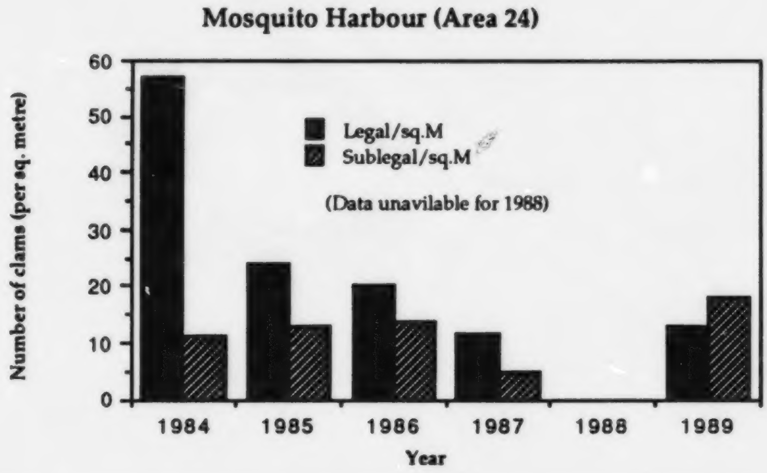

Figure 10. Graph showing the results of surveys of manila clams on beaches in Mosquito Harbour, 1984-1989.

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[170] Only summary survey data has been made available by DFO although some details of the survey methods used were described by Rick Harbo, Shellfish Management Biologist, in an interview at the offices of DFO South Coast Division, Nanaimo, 16th March 1990.

[171] The survey teams of the Ahousat Band Council and the Kyuquot Native Tribe used stratified random sampling with 30 to 60 0.25 sq. metre quadrats. 10% of all samples are re-checked to determine average percentage recovery by size class and sampling of finer sediments is completed to ensure recovery of undersize stock. See draft of Nuu-Chah-Nulth Regional Clam Management Plan (not dated).

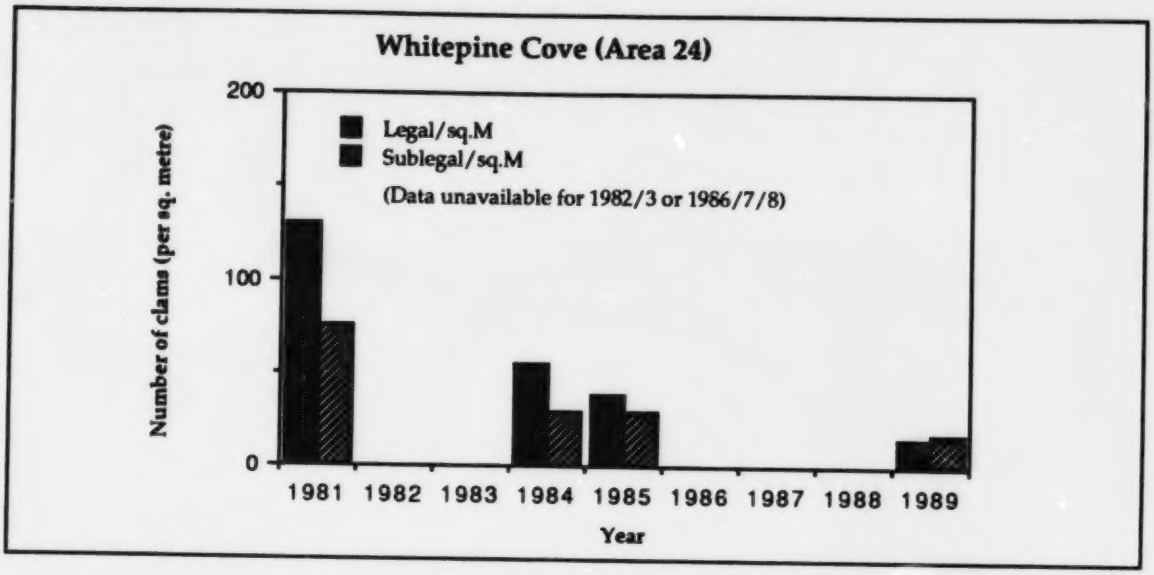

Figure 11. Graph showing results of surveys of manila clams on beaches in Whitepine Cove, 1981 - 1989.

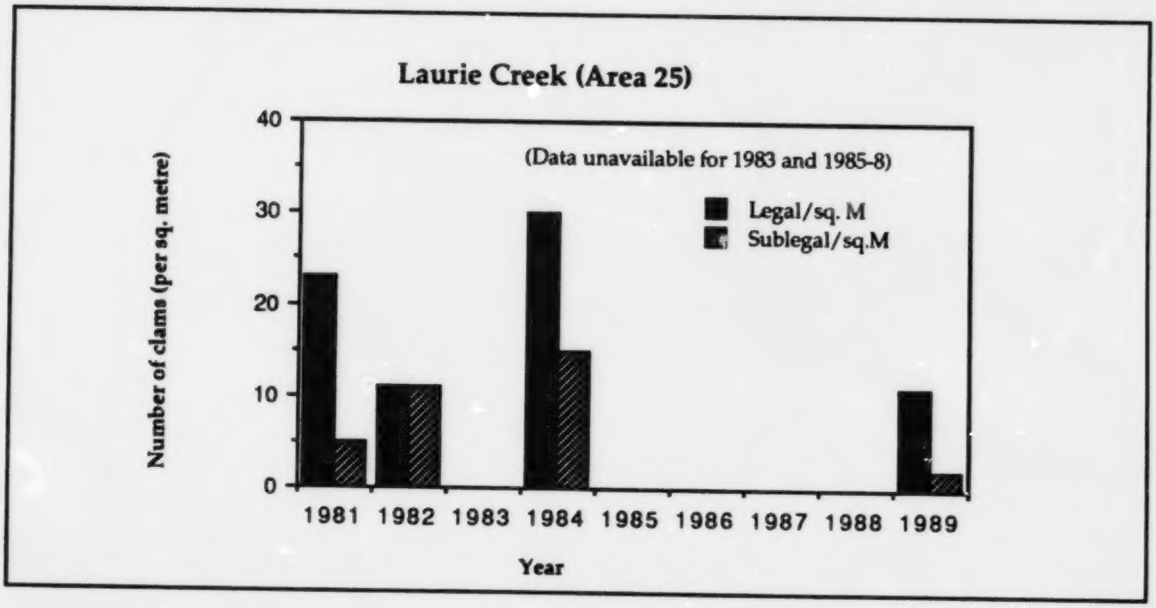

Figure 12. Graph showing results of surveys of manila clams on beaches near Laurie Creek, 1981 - 1989.

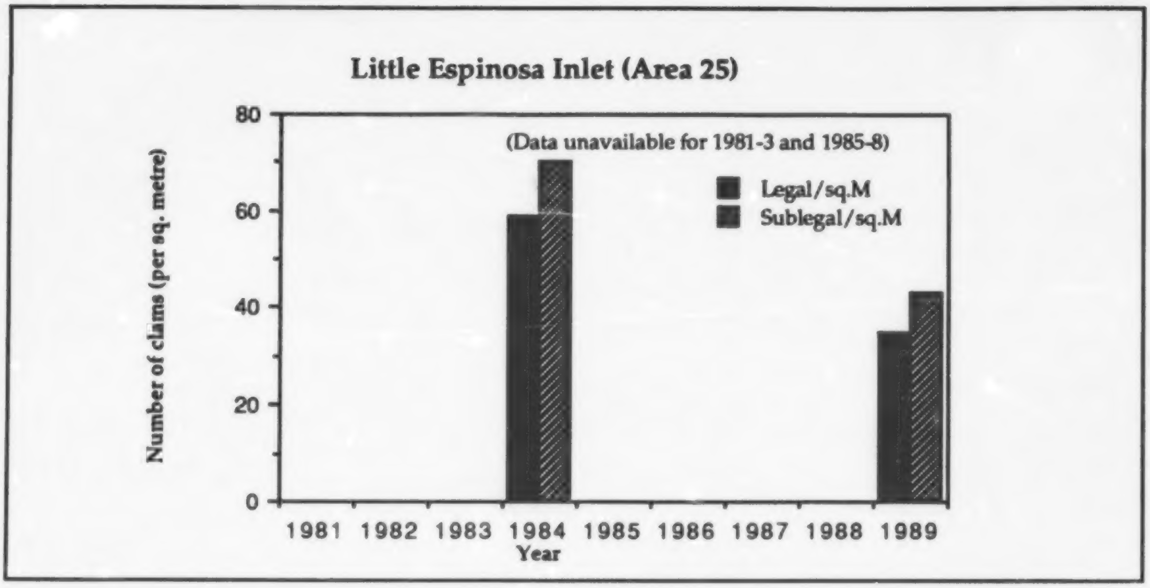

Figure 13. Graph showing the results of surveys of manila clams on beaches in Little Espinosa Inlet, 1981 - 1989.

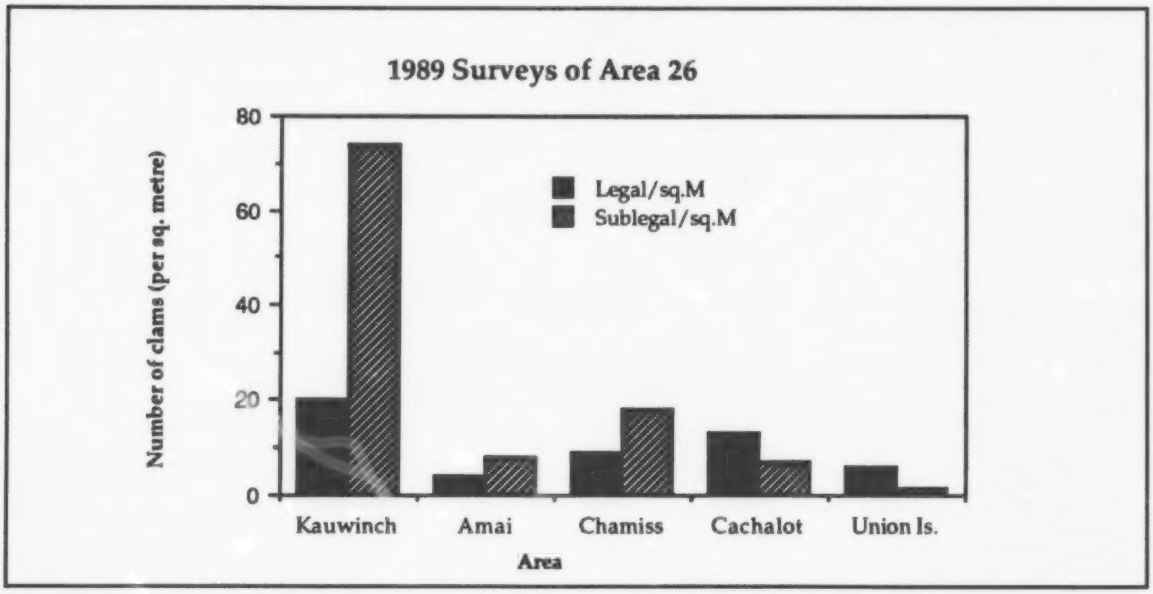

Figure 14. Graph showing the results of surveys of manila clams in Area 26, August 1989.

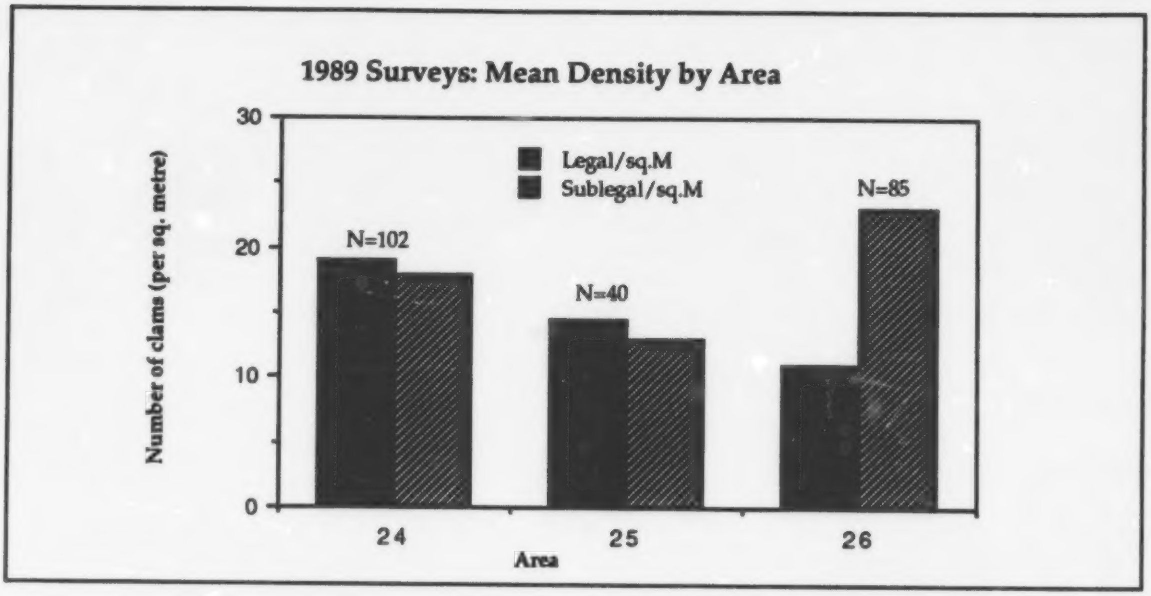

Figure 15. Graph showing the mean average densities of manila clams on beaches in Areas 24, 25 and 26, from surveys completed during August 1989.

The NTC claim that these graphs show stock levels to be declining and that there is a serious conservation problem that should be acknowledged and addressed. They express frustration with the intransigence of the DFO and argue that more sophisticated methods such as catch-per-unit-effort (CPUE) and yield-recruit modelling should be applied in order to generate a more detailed level of understanding of clam populations on the West coast.

The management biologists of DFO reject the claims of the NTC and argue that the trends apparent in these graphs are not statistically significant. Moreover, they argue that clam stocks should be expected to fluctuate and that what the NTC see as anomalies in overall declining trends (for example the high levels of undersize clams in Area 26) are in fact proof of rapid recovery capability. They argue further that trends on individual beaches cannot be representative due to the highly variable micro-oceanography and though declining stock levels can be observed in some cases this is simply the fishing-down of lightly exploited stocks to optimum productive levels.

The DFO also argues that as little is known about predation, mortality, exposure and desiccation, survival of undersize stock after digging and re-burial, or recruitment, any interpretation of this data is conjectural. They agree that declines are not likely to be caused by other environmental factors but suggest that erratic population profiles are attributable to strong year classes and that there is no conclusive evidence of fishing effort causing recruitment failure. They also maintain that experimental management methods would be very costly and would be redundant given the variability of conditions on the West coast. They point out that CPUE is difficult to operationalise and that such approaches rapidly become redundant and ineffective when diggers anxious to keep areas open realise that their output is being monitored in this way.

Given this interpretation, and given that the economic return from the clam fishery continues to rise, DFO argues that there is no reason to introduce further closures as there is no clearly demonstrable conservation problem. They reiterate that the cost of more detailed surveys is prohibitive and insist that the most appropriate management method continues to be the legal size limit.

Without more detailed surveys, it is difficult to discount either interpretation. The data as represented give no indication of any seasonal closures which might have affected the population profiles, give no detailed breakdown of individual year classes nor indicate how extensive the surveys might have been. The evidence does suggest an overall decline in stock levels but the rate or significance of this decline cannot be reliably established. Such uncertainties can only be removed if a higher resolution management approach is adopted that can trace the fluctuations of stocks on a local level. Detailed analyses for the entire coast would be unacceptably costly, but some attempt to increase the level of detailed knowledge for the most productive beaches might increase confidence in this kind of approach. Even the leading biologist in the field has called for such studies.[172]

It seems apparent however, that in the absence of more refined data on population dynamics, the claims of DFO that stocks are still above threshold levels are only conjecture. Though the prevailing biological wisdom suggests that the fecundity of manila clams is so high that any short-term depletion is rapidly corrected, the lack of any reliable data on recruitment or yield suggests that this approach is, at the very least, questionable.

4.4. The Need for a New Management Approach in Kyuquot Sound

The previous sections have presented an overview of the clam fishery on the West coast. Firstly, the rationale for the prevailing management framework has been presented and a number of generic problems have been identified. Secondly, the conflicts and tensions between different groups within the industry have been described and it has been shown that each player holds to a different perception of the other stakeholders and of the conflict itself; the conflict is thus best described as a 'controversy' which involves substantial frame-conflict. Finally, the available biological survey data was reviewed and it was shown that with existing information, few conclusions can be drawn other than that stock levels on the West coast do seem to be generally declining. It remains unclear whether this trend actually represents a conservation problem.

The following sections summarise these ideas and argue that the conflicts within the clam fishery are a reflection of the characteristic weakness of existing approaches to renewable resource management. It is argued that there is an urgent need to acknowledge the crisis of consent on the West coast and explore more innovative approaches to the management of the clam fishery.

Management Under Pressure

It is clear that there is a considerable level of frustration within the clam fishery and that many of the resource users are highly dissatisfied with the present management framework. The criticisms of these groups have been summarised into prominent themes below:

(i) Management is seen to be polarised with authority remaining in the hands of the DFO. The present management framework casts the stakeholders in the stereotypical roles of guardian and villain and this inhibits co-operation. When problems do arise, they are immediately framed in terms of competing interests and there are no mutually acceptable mechanisms for conflict resolution. This produces a chronic lack of trust and limited willingness even to enter into exploratory dialogue for fear of inflaming dormant issues. Though the advisory process has increased the level of consultation, it has rapidly become a forum for political lobbying and many stakeholders believe that management simply takes the least line of defence and responds to the loudest voice. The emphasis on centralised management also overlooks the possibility of using local sources of information which might reduce monitoring costs. Part of the reason for this is that under the present climate there is little incentive for users to volunteer information that would close down the local fishery and incur local costs.

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[172] Bourne, N. "A Review of Management Options and the rationale for Size limits in British Columbia's Commercial Fisheries for Intertidal Clams," op. cit., 130.

(ii) It is widely perceived that DFO holds unreasonably to a scientific mind-set and remains unresponsive to other issues. Though many groups are clamouring loudly that their first-hand experience demonstrates that stocks are seriously depleted, to date management refuses to introduce closures without scientific evidence for fear of the move being misinterpreted as a re-allocation. Even when those who stand to lose personally call for immediate closures, management is reluctant to respond. Though the many political and social dimensions of the problem are woven together with the scientific, the present management system is reluctant to address these other issues directly.

(iii) Many stakeholder groups believe that the aboriginal land question lies at the heart of the conflicts on the West coast and yet most are frustrated by the inability of the present management system to address this issue. In particular, DFO seems unable to take what are perceived as risky initiatives for fear of setting precedents or overstepping their policy guidelines. At the regional and local level, some ambitious moves have been made but this is not reflected in policy guidelines at more senior levels of management. While it is clear that the resolution of the issue will take time and that final decisions will be made in other forums and at other levels, the present management approach would almost certainly be unable to adapt to changes in the decision-making mechanism without considerable upheaval.

(iv) Management is felt to be reactive and seems capable of responding to problems only after they arise. Without reliable stock assessments and with only a limited number of enforcement officers for the West coast, monitoring the depletion of stocks on the beaches seems almost impossible except by occasional surveys completed after harvesting - by which time the stocks may already have been threatened. Catch size and undersize violations can only be checked at the processing plant, and emerging problems can only be addressed if the lines of communication between enforcement officers in the field and those compiling centralised data work efficiently. When problems do arise, it is inevitable that there will be a finite response time before closures can be introduced and from recent experience, even then DFO is reluctant to act without incontrovertible evidence. Furthermore, while the DFO's biologists concede that the most severe damage to stocks may be caused by the redigging of the most productive beaches, management relies on the economic principle of efficiency to discourage repeated harvesting. Given the number of diggers on the beaches and the lack of organisation it seems unreasonable to assume that stocks can be protected in this way.

(v) Information is often lacking and opportunities for productive exchange of information are limited. There is a lack of reliable biological information of either stock levels or population dynamics in any area of the West coast. Under the existing system, increased surveys or experimental management would be prohibitively costly and might be considered to be unrepresentative of the coast as a whole. In the absence of base-line data, dormant conflicts can only be expected to erupt if closures are removed without adequate information to show that stock levels have recovered.

Preliminary Reflections on the Case-Study

The case-study of the clam fishery on the West coast provides just one real-life example of a conventional resource management system beset by conflict and yet it is characteristic of the challenges facing many managers of wildlife resources elsewhere in Canada. In many settings where renewable resources are managed for a competitive harvesting community, the roles of manager and user are cast in opposition as guardian and villain, undermining trust and providing a breeding ground for conflict. This in turn leads to a breakdown of cooperation and the generic problems of communication and pervasive uncertainty are the inevitable result. When a crisis of consent emerges as in this case, what is highlighted is not so much a management problem that is unfamiliar and unanticipated, but the inherent weakness of conventional approaches to resource management as a whole. In this way, the case-study provides an illustration of the theoretical and practical problems that were identified in the opening chapters.

The framework adopted for the analysis reveals a number of critical issues. Not only is there a lack of communication, there is also a chronic lack of accurate and reliable information. Even where information does exist, it is interpreted in different ways by groups who each hold to a different perception of the underlying nature of the dispute at hand. When reluctant participants are drawn into discussions, the inconsistencies in these frames often result in parties 'talking past each other' - what Rein and Schön have referred to as 'abnormal discourse'. In such cases, each group perceives the apparent inability of their adversaries to see an alternative point of view as a form of obstruction, often failing to appreciate how underlying frames inform all parties' positions.

The conflict in the clam fishery on the West coast is a clear example of a 'controversy' in the sense of Rein and Schön's use of the term, or indeed a 'wicked problem' to use the language of Mason and Mitroff. The central dispute, which focuses on the effectiveness and fairness of the present management regime is set within a shifting contextual environment (refer to fig 4). At the policy level (the proximate context) shifts include the introduction of new management areas, itself a response to the rising number of diggers participating in the fishery. At a more general (macro context) level, the economic climate is undergoing substantial change as the market for shellfish strengthens and prices rise. The political and legal climate is also undergoing dramatic change, particularly with respect to the question of aboriginal title and land claims. Such analysis suggests that the reconciliation of frame-conflict is an essential ingredient of any recipe for success.

At the heart of the conflict is the concept of property and property rights. Property underlies many of the issues of access and allocation and the vehement reactions of many groups reflect their differing perceptions of the fairness of the present management system and how it conflicts with, or supports their particular understanding of property rights. As the opening chapters have shown, management is a prerogative that flows from the prevailing system of property, and in Area 26, it is property which is the central issue in dispute.

The remaining chapters consider how best to move beyond the conflict in Area 26, and a set of recommendations is presented that is applicable to other resource management disputes in similar contexts. In keeping with the themes outlined earlier, the following chapters focus specifically on the potential for communal property systems to provide a foundation for more appropriate, cooperative management regimes. For Area 26, the first step is to establish a set of 'appropriate' management principles to which each of the stakeholder groups can subscribe. Accordingly, the study now turns to the traditional resource use system of the Kyuquot Native Tribe and identifies a set of key characteristics. These characteristics are then adapted in order to provide a set of contemporary management principles that better meet the more complex demands of the many user groups. Finally, a skeleton framework for improved management is proposed that is based on the normative criteria set out at the end of chapter 3.

CHAPTER 5:

THE TRADITIONAL RESOURCE USE SYSTEM OF THE KYUQUOT NATIVE TRIBE

> "As the Pacific Swell breaks along the shore of Vancouver Island's West coast, there may still be some who count the waves to see which one is the biggest. For centuries men have been counting these waves, old natives sitting before their cedar-plank houses, watching the sea. "The ninth wave is the biggest," one might say. "No, it's the seventh," another might maintain. Or the fifth, or the thirteenth; the question was never settled. There are many other details as yet unsettled about the life of the native peoples of the West coast, but enough is known to sketch in the main forms for a popular description. I will focus attention on the more important matters, but keep in mind that West coast life was also filled with thousands of lesser things, like wave counting, which go undescribed."[173]

These opening words of Eugene Arima's (1983) account of the West coast peoples conveys an important message: that any description of a culture or a people will always be hopelessly inadequate and incomplete. While a systematic account can present facts and figures, much of the richer texture of culture can never be captured and any description remains just a poor monochrome image of a dazzlingly colourful tapestry.

The traditional resource use system sketched briefly below is but a small element of the vastly more complex and comprehensive mosaic that makes up a society. It is certainly incomplete, perhaps insensitive to some features and it may overlook others. It has also been written with a strong emphasis on the interlinkage between practice and belief, and between knowledge and ethics. This is intentional for while it may risk becoming factually less precise, it is these linkages that give the culture of the Kyuquot people its coherence.

There is a considerable lack of recorded data on the Nuu-Chah-Nulth (or 'Nootka') peoples that can support this kind of 'holistic 'account. Firstly, though the cultures of the Pacific Northwest have been recognised by ethnographers as some of the most sophisticated in North America, there is no written language and therefore no 'formal' record to which to refer. There is of course a vast oral history locked up in legend and mythology, but sadly, this often has only limited legitimacy for academic purposes. Secondly, the ethnographies that do exist are often formatted as 'cultural catalogues', presenting a picture of a society in the form of a mosaic of dissected elements such as ceremonials, daily duties, religious beliefs and the like. This is in part due to the preoccupation of the anthropological discipline with 'scientific' methodology and rigour and while such accounts avoid the temptation to over-interpret data, they remain dry and lack the vibrant tone that gives any culture its life. Thirdly, much knowledge and wisdom has been lost. Not only were populations on the West coast decimated by both proto- and post-contact diseases, but the remaining elders are now of considerable age and many are passing on, taking their invaluable stores of knowledge and history with them.

As a result, the following account relies heavily on primary field research, corroborated where possible with published sources. Material is also drawn from the NTC (1989) report on the Traditional Fisheries System of the Ehattesaht Band[174], the neighbouring Tribal Nation just to the south. Some factual data is also reproduced from Kenyon's (1980) report on 'The Kyuquot Way'[175] although some members of the Kyuquot Native Tribe have indicated that they consider this work to be of dubious accuracy. Therefore, much of the field data has been interpreted liberally and the account is vulnerable to criticisms that it is subjective. However, what is presented below is the end product of some four months of collaborative work between the author and members of the Kyuquot Native

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[173] Arima, E. Y. *The West Coast (Nootka) People*, (Victoria: British Columbia Provincial Museum special publication, 1983): v.

[174] Berringer, P., Green, W. and Smith, V. *Ehattesaht Traditional Fisheries Systems: Final Report*, op. cit.

[175] Kenyon, S. M. *The Kyuquot Way: A Study of a West Coast (Nootkan) Community*, (Ottawa: National Museums of Canada, Canadian Ethnology Service, Paper No. 61, 1980).

Tribe. Many of the ideas that appear in the synthesis of the literature offered above are reflected here in wording and style and the account melds together such material with the products of primary research in the field. In addition, Elders of the KNT and in particular, Richard Leo, the Chief Councillor, assisted in the preparation of an earlier draft and offered some suggestions where they felt the substance or wording was misleading. That they received this work with favour lends further credibility.

5.1 The Traditional Territories of the Kyuquot People

The Kyuquot people claim traditional territories extending from Cape Cook to Grassy Island (see figure 16, and figure 9 above). Their territories also extend out to sea and covers a series of recognised fishing grounds offshore. The extent of their claim in this direction has not been established.

Radio-carbon dating has established their occupation stretches back at least 4000 years[176] -the tribe maintains that they inhabited this section of the coast since time immemorial.

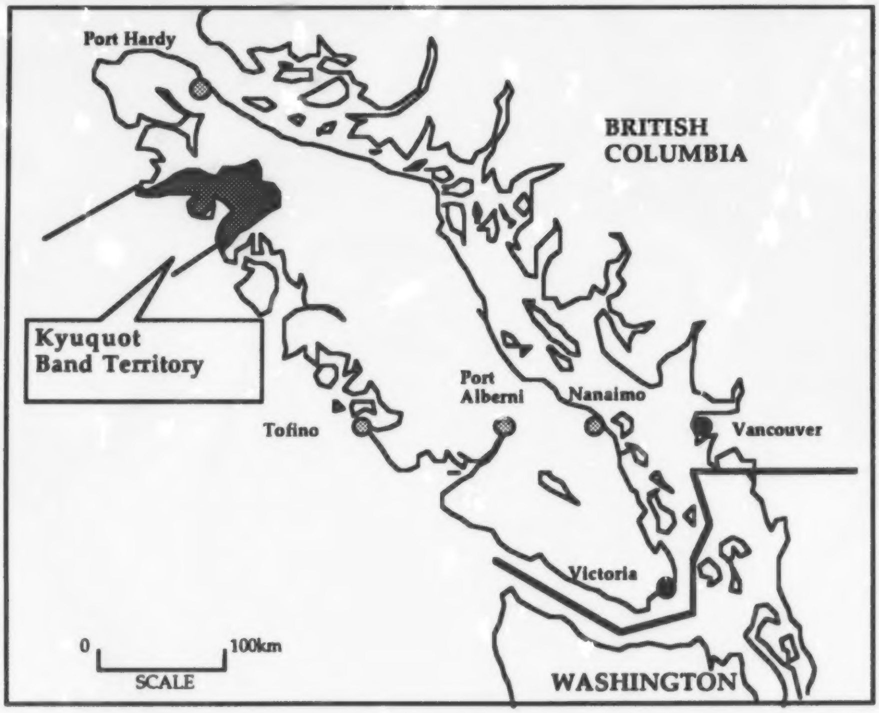

Figure 16. Sketch map showing the traditional territories of the Kyuquot Native Tribe.

5.2 The Three Basic Elements of the Traditional Resource Use System: Social Institutions, Ecological Knowledge and Ethics

The account presented below is structured around what are referred to here as the three basic elements of the traditional resource use system. In keeping with the general themes presented above, the Kyuquot people's concept of property is considered first together with the social institutions in which these concepts are embedded. Secondly, the scope of traditional ecological knowledge available to the Kyuquot people is reviewed. Finally, the body of ethics that bound the traditional system together is described and it is argued that, contrary to popular opinion, the traditional resource use system of the Kyuquot people achieved effective conservation through wise use and sound management.

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[176] Dewhirst, J. "Nootka Sound: A 4000 Year Perspective," *Sound Heritage*, 7(2) (1978):1-30.

Social Institutions: *Ha-Houthle*

The fundamental social institution for the people of Kyuquot Sound was the *ha-houthle*, literally translated as 'rites of chieftainship'. Ha-houthle are not simply rights of ownership or authority covering limited areas of tribal territory (so called 'tangible rights') but include a set of broader property rights permitting the usage of songs, masks, dances and certain ritual ceremonies ('intangible rights'). These rights differ in form and scope from area to area and were held by the hereditary chief and transferred intact to his/her successor. Ha-houthle were not however individual rights but instead represented broader collective rights administered by the chief on behalf of the lineage group to which they belonged. Resources, rights of access, the usage of songs and masks and even rights to names were communal property, held and maintained by the community as a whole. These communal property rights were only transferable within that group, and could not be alienated from that social and political unit.

Field research suggests that at least 14 of these ha-houthle existed in Kyuquot Sound, each with a village located at the mouth of the major rivers or inlets. This is confirmed by Drucker's (1951) account which suggests that these 14 villages made up four 'tribes' each with a permanent winter tribal site and a ceremonial longhouse (see figure 17).[177] The four tribes together formed what Drucker terms the 'Kyuquot confederacy' which assembled each summer on Aktis Island and he suggests that "there was a very real feeling of solidarity" within such confederacies.[178] Rank and status changed even at this level and it is assumed that property rights were also exchanged. This highest political grouping will be referred to here as the Kyuquot Tribal Nation.

In addition to these village sites, there are a number of seasonal fishing and hunting camps at preferred locations throughout the Sound. In some cases these camps are isolated from the main village and may be at some considerable distance from the home territory to which they relate; for example, the people of Kayouk (variously *qa'yokw* or *Ka:yu:k* ; thus 'people of Kayouk' = *qa'yukw.ath* or *Ka:yu:kwat'h'*) had rights to a summer camp near the tribal site at Chamiss Point, locally called Village Point (*Sha:we:sZpa:*) which lies beyond the village site at Chamiss Bay. Such an arrangement shows that some ha-houthle included isolated parcels of territory which suggests the existence of long-established agreements between the neighbouring hereditary chiefs.

A village unit, each with its own longhouse, was made up of an extended family with common lineage. The chief of the village (*ha'aw'ilh*) held jurisdiction over the territory and was responsible for the distribution of resources and wealth. The hereditary chief for the Tahsish River held the most senior seat amongst the Kyuquot people and was recognised as the highest ranking hereditary chief at the confederacy level. Other chiefs were then ranked in turn and had their own longhouse on Aktis Island set out in order of importance. The resulting pattern of houses, recorded by Drucker, still survives in the living memory of elders today. (See table IV).

The territorial boundaries of the ha-houthle were recognised and respected not only by the people of that longhouse, but by all the people of the Kyuquot Nation. These boundaries were constant for all species and throughout all seasons and extended not only over the land, but also over marine areas. On land, prominent terrain features indicated territorial boundaries while at sea, fishing grounds were located by visual triangulation from prominent peaks and headlands. Surviving elders have retained a detailed knowledge of traditional place names throughout the Sound together with local stories and legends to accompany them.

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[177] Drucker, P. *The Northern and Central Nootkan Tribes*, (Washington: Smithsonian Institution, Bureau of American Ethnology, Bulletin 144, 1951):220, 222-225.

[178] Ibid., 221.

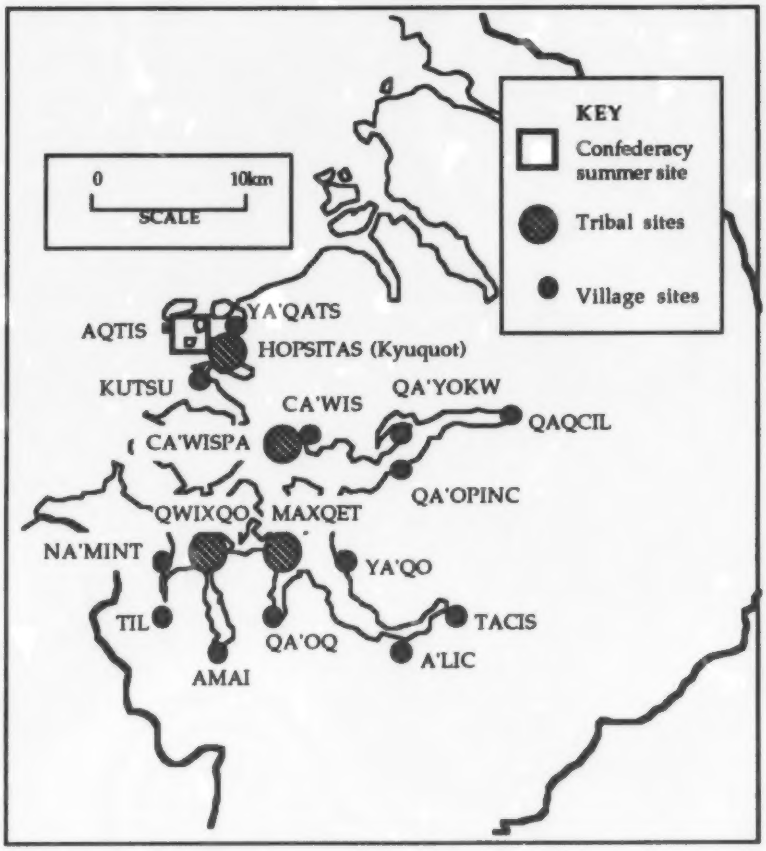
KEY
Confederacy summer site
Tribal sites
Village sites
0
10km
SCALE
AQTIS
YA'QATS
HOPSITAS (Kyuquot)
KUTSU
CA'WIS
QA'YOKW
QAQCIL
CA'WISPA
QA'OPINC
QWIXQO
MAXQET
NA'MINT
YA'QO
TIL
QA'OQ
TACIS
A'LIC
AMAI

Figure 17. Map showing the 14 village sites (ha-houthle) in Kyuquot Sound. Adapted from Drucker (1951: 224).[179]

In addition to the hereditary chief, each ha-houthle nominated a *whet-wock*, perhaps best translated as 'steward'. This person was trained from birth to be the guardian of both the tangible and intangible rights of the ha-houthle and was invested with the authority to over-rule the chief in matters concerning property rights and hereditary responsibilities. The whet-wock was also responsible for the co-ordination of cooperative harvesting of salmon at the village weir site(s) and for the regulation of access to fish and game. Though the whet-wock had considerable influence over these decisions, in many cases they would discuss harvesting plans with tribal elders and the heads of each household; like the chiefs themselves, the extent of their actual authority flowed from the level of respect afforded to them by the people they served.

The regulation of access to prime hunting grounds or fishing sites (*mituk*) relied on a set of well-established agreements amongst the villagers. In many cases, families were freely given permission to take according to their needs without having to refer to the whet-wock, although they were strictly prohibited from wasting precious foodstuffs or taking more than they required. For more limited or prized species, such as whales, seals or large game, the hunter would offer the catch to the hereditary chief to distribute to the whole village, with high-ranking families, respected elders and the hunter all being given preferential cuts of meat or fish. The whet-wock also had the authority to prohibit or limit the harvesting of certain species altogether for conservation reasons and may have been held partly accountable for any unexpected fluctuations in supply. In extreme cases of irresponsible management, the whet-wock could be deposed by community consensus.

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[179] There is considerable confusion over the spelling of the Kyuquot language and many discrepancies between the sources used here (Swadesh, M. and Klokeid, T. J. *Kyuquot to English Dictionary*, (Hawaii: University of Hawaii, Pacific and Asian Linguistics Institute, 1969); Drucker, P. *The Northern and Central Nootkan Tribes*, op. cit.; and written reports from elders of the Kyuquot Native Tribe). Although the Nuu-Chah-Nulth Tribal Council has recently adopted a standardised alphabet, and has started the laborious process of revising existing reference sources, on the advice of the NTC's consultant ethnolinguist, Prof. J. Powell, the spellings here have been reproduced in their original form.

Present Research (1990)	**Drucker (1951)**		
HOUSE NAME	**HOUSE**	**LOCAL GROUP**	**TRIBE**
mutswaya	matsuwai	qa'yokw	cawispath
shitlapa-et	cilsyap	qa'opinc	cawispath
hoop.kins tinim	hupkinstinim	qa'oq	qanopittakaml
toops.sath	tupksath	qa'opinc	cawispath
houet.sisclaht	hocatsislath	tacis	qanopittakaml
cahoohqaht	hictsoptanl	qa'oq	qanopittakaml
ca-nii-yaht	cawisath	cawis	cawispath
/no.oo-cle	nucul	amai	qwixqc'ath
neetskicle	naniqs	tacis	qanopittakaml
ahtlesaht	a'licath	a'lic	qanopittakaml
teel.h-aht	tilath	til	qwixc'ath
kahutle-aht	qaqcilath	qaqcil	cawispath
kayniclokt kiml	qwinaikinctakaml	til	qwixc'ath
?	qimiluqtakaml	qa'yokw	cawispath
2.uawins aht	qwoqwinas	ya'qats	la'a'ath
	latcwcstakaml	ya'qats	la'a'ath
choomupshat ?	tcitcitqinil	tacis	qanopittakaml
	?	?	?
nachah-aht	natcasath	tacis	qanopittakaml
tla-ah-aht kaht. tsakks saak	qats tsaksk	ya'qats	la'a'ath
?	?	?	?
yahkoaht	yacqocacath	tacis	qanopittakaml
amiyaht	amaiath	amai	qwixqc'ath
	kutsu'takaml	kutsuc	la'a'ath
	kutsu'takaml	kutsu	la'a'ath
	hilinatoath	ya'qats	la'a'ath
	hilinatoath	ya'qats	la'a'ath

Table IV. Names of the houses on Aktis Island in order of rank, as recorded by Drucker (1951) and as recalled by Jim Nicolaye and Robert Peters, elders of the Kyuquot Native Tribe, during recent field research (1990).

The boundaries of each ha-houthle were affirmed in complex ceremonials at the confederacy or 'national' level. These ceremonies, called 'potlatches' by ethnographers, were themselves guided by a strict code of protocol and ritual; even the seating arrangements in the large longhouse conferred on each hereditary chief their rank and the status of their ha-houthle. In this way, territorial boundaries, hereditary rights and social status were regularly and formally recognised in the presence of all the Kyuquot people. Codes of behaviour, binding agreements and changes in rank were also presented and acknowledged. This forum would also be used for the discussion of unresolved disputes, although elders claim that serious infringements of customary 'law' are unheard of in living memory.

For most purposes, each longhouse or village was independent of neighbouring groups and could rely on their own means and resources. To that extent they were politically and economically autonomous. However, certain villages controlled special resource sites or supplies within their ha-houthle (such as fishing sites or weirs on the Tahsish River which has a major run of salmon or especially productive inshore fishing grounds for herring or other fish). In these cases, the chief of that territory would ensure that the resident community had taken sufficient for their needs and would then invite other groups to come and harvest a portion of the surplus catch. The host whet-wock would maintain control of the harvesting effort and would call a halt to the fishing or hunting when the agreed number of fish had been taken.

Within the Sound, elders recall that the interlocking boundaries of the territories of hereditary chiefs gave structure to the harvesting of fish and game although the exact boundaries have since been forgotten. However, on the outer coast, fishing grounds for halibut appear to have been beyond the boundaries of the 14 ha-houthle. Although the location of these summer sites was well known and understood, they were not apparently under the exclusive jurisdiction of any one particular chief. It is assumed that in such a carefully structured system, some mechanism existed to regulate access and/or allocate the catch. One elder suggested that the head chief of the Tribal Nation may have assumed this responsibility.

Economic relations existed not only within the tribes and villages of Kyuquot but also between this Tribal Nation and other Nuu-Chah-Nulth Tribes sharing the same language. Trade was also established with 'foreign' groups for rare or highly prized materials and foodstuffs. One of the most regular trading routes was via the Tahsish River valley to the Nimpkish territory on the east coast of the Island. The rivers here support sizeable runs of oolichan from which a highly valued oil or grease (*gleena* or *kleena*) is rendered. There are even accounts of trading relations between the Nuu-Chah-Nulth and tribes in what is now recognised as the U.S.A. Kyuquot elders recall the trading of dried and smoked seafood and cedar-bark mats in exchange for baskets and grain unavailable in the local area.

The ha-houthle then, was not only the territory of the hereditary chief, but also included codes of conduct, various rules of access and a complex set of cultural conventions and protocols. It was this political unit that formed the basis of the cultural system of the Kyuquot people.

Ecological Knowledge and Resource Use

Like many indigenous societies, the Kyuquot people developed and maintained an intimate relationship to the land, sea and the resources on which they depended. It is no exaggeration to suggest that their culture revolved around the physical and spiritual relationship to the natural world. Such a close connection inevitably leads to a sophisticated understanding of 'nature' and though embedded in a very different cultural framework, the Kyuquot people maintain even today a very comprehensive understanding of the cycles and thresholds of marine and terrestrial ecosystems.

The repository of much of this knowledge was the whet-wock. It was they who, through the teachings of the elders, retained the empirical knowledge base which sustained the relationship between humans and the natural world. The scope of this knowledge is extensive and is only recently being appreciated by ethnobotanists, ecologists and resource scientists.

The wide range of foodstuffs utilised by Native people includes all five species of anadromous salmon, a selection of other marine and freshwater fish, marine mammals, shellfish and plants, a variety of small game, ungulates and a host of terrestrial plants, fruits and root vegetables. Recent anthropological research has uncovered the complexity and scope of the Nuu-Chah-Nulth vocabulary describing not only each individual species, but also their condition, seasonal migrations, life-cycles and habitat.[180] This wide range of food sources offered a varied diet and afforded the Kyuquot people great flexibility to overcome the vagaries of supply.

Technology was locally well-refined to minimise effort. Fishing technology included a number of designs of harpoons, hooks, weirs and traps and more recently nets, while a variety of deadfall traps were used to capture large game on land.

Each group moved from their primary village site to the seasonal camps on an annual round that matched the cyclical availability of major natural resources (see table 5). This cyclical harvesting strategy was co-ordinated by the whet-wock who directed the efforts of the village group. It was the whet-wock that acted as 'foreman' for salmon fishing at weir sites and was held responsible for the re-opening of the weir to allow sufficient spawning stocks to pass.[181] Elders recall how the whet-wock estimated the size of the run and then together with the hereditary chief, ensured the equitable allocation of catch amongst the host village and fishers from neighbouring ha-houthle in accordance with long-standing agreements. Many stories refer to the spectacular abundance of fish and recount how 400 - 500 salmon were caught and preserved by drying and smoking.

In some cases access to fishing grounds was denied. In Fair Harbour, for example (called *qa'oq* or *ZKa o:kw*), it is said that the whet-wock forbade the fishing of herring until the runs of dog salmon had passed. This prohibition may have been a mechanism to protect the herring stocks at a critical time in their life cycle, but is more likely to be a strategy to ensure that the salmon reached the weir site where the harvesting effort could be more easily and effectively co-ordinated.

Highly detailed knowledge existed for shellfish. A variety of species were harvested on the beaches at low tide, aided if necessary by the use of burning torches soaked in pitch. It was generally the women who dug for clams (*ya'a'is* =butter clams; *h"ichin* = littleneck clams) although menfolk would help if and when necessary. Shellfish were either eaten raw or were baked, roasted or steamed (*muqwaa*) in heated rock pits on the beach, each pit carefully lined with thimbleberry leaves and covered with mats of cedar bark (*pits'up*). The cooked meat, especially of the larger butter clams, was then smoked or dried and was said to keep for up to six months.

Elders also recall how their ancestors knew when the shellfish were not safe to eat. The occurrence of PSP was said to coincide with arrival of 'a bird' which in some way contaminated the clams and other bivalves. Despite this, there were some who were unwise enough to ignore the elders warnings and suffered near fatal sickness as a result. One elder recalled how one such victim drank oolichan oil as a medicinal tonic and was cured. Clams were also not taken during herring spawning season when the water appeared milky. It was believed that the clams absorbed an unpleasant taste at this time.

In addition to fishing at weir sites, the hunting of game was also a carefully staged affair. Geese, driven in to Kashutl Inlet during storms or poor weather were hunted at night from canoes. The whet-wock orchestrated the movement of a number of hunters each with a fire on a platform at the back of their canoe which they shrouded with a cedar-bark mat. Exposing the light from the fire startled the birds and allowed then to be driven into enclosed bays where they could be more easily caught. These hunting missions were carefully co-ordinated by the whet-wock and required close co-operation between all the hunters. Poaching was easily discovered if there were any irregularities in the agreed pattern of exposing each fire.

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[180] One example of this in the Nuu-Chah-Nulth territories is the publication of *Teachings of the Tides: The Uses of Marine Invertebrates by the Manhousat People* (Nanaimo, B.C.: Theytus Books, 1981) written by David W. Ellis with the Ahousat elder, Luke Swan.

[181] There are even stories describing how the whet-wock would select male salmon and leave the female spawning fish to pass by. This was achieved by tapping stones together underwater to attract the more inquisitive male fish (from an address by Richard Watts, Co-Chairperson of the NTC, to the the United Fishermen and Allied Workers Union, 'Vision 2000 Conference', UBC Campus, 1st-3rd June 1990.)

MONTH	SPECIES HARVESTED	LOCATION
JANUARY FEBRUARY	Red Snapper, Dried/Smoked Salmon, Shellfish.	Village groups resident in longhouses or at the Tribal village site for winter ceremonials.
MARCH APRIL	Herring spawning season.	Village groups move to particular inlets to make use of favoured spawning grounds.
MAY	Sockeye arrive at Easy Inlet (*qa'yokw* or *Ka:'yu:k*)	Village groups move to seasonal camps to catch and process fish. Access may be granted to the runs at Easy Inlet.
JUNE JULY	Halibut fishing season.	Village groups move out to Aktis Island at the invitation of the head chief and negotiate access to fishing grounds offshore.
AUGUST SEPTEMBER	King salmon run at Tahsish, Dog salmon run at Kashutl.	Village groups may visit seasonal camps and co-operate in fishing at weirs. Hunting of game continues.
OCTOBER NOVEMBER	Dog salmon runs arrive at other inlets.	Fishing at weir sites and processing of catch for storage and winter use.
DECEMBER	Coho in Tahsish.	At the end of the salmon runs, village groups congregate at the tribal longhouses for winter ceremonials. Dried and smoked fish and shellfish is the mainstay of the diet.

Table V. An outline of the traditional annual cycle of resource use for the Kyuquot Tribal Nation. (After information collected during field research; see also Sapir, E. and Swadesh, M. *Native Accounts of Nootka Ethnography*, (Bloomington, Indiana: University of Indiana, Research Centre in Anthropology, Folklore and Linguistics, 1955 reprinted 1978): 27-46.

There are many such stories of hunting and food gathering and there are also indications that many of the medicines of the 'shamans' were derived from local species. While much detail remains to be learnt, it is evident that the Kyuquot people had a very detailed knowledge of the resources on which they relied and a sophisticated understanding of both natural cycles and the response of these systems to human intervention.

The Question of Conservation: The Ethic of Reciprocity

Throughout the Northwest coast there is a prevalent myth that portrays indigenous societies as bands of nomadic, warlike hunter-gatherers living easily off the abundant and readily-accessible resources of the land and sea. This view sees the rich art-forms of Native Indians as evidence for ample leisure time afforded by this apparently luxurious lifestyle. The same myth asserts that West coast peoples had no reason to hold to any ethic of conservation as their impact on natural stocks was minimal due to low population levels and 'stone-age' technology. It is argued here that this view is entirely incorrect and needs to be dispelled.

Each and every child was schooled in Native philosophy starting from 4 days after their birth. It was the grandparents who assumed the responsibility to educate the young through repeated stories of the ways of the elders. The principal themes of their teachings were 'never to waste', 'to share', and 'to care for all things'. It was this grounding in the philosophy of respect that gave the culture of the Nuu-Chah-Nulth peoples its stability.

The Nuu-Chah-Nulth philosophy, and the cosmology from which it flows is rich and complex and cannot be adequately addressed here. However, it is important that some of the principal features be acknowledged for it is they that provide the vital linkages for the traditional resource use system of the Kyuquot people.

Humans and animals were not seen to be altogether distinct entities in the Kyuquot cosmology. The distinction between the animate and the inanimate and even between the tangible and the spiritual are not as rigid in the Native world view as they appear in western philosophy. Consequently, animals were considered to be but one manifestation of the human-like spirits that lived 'beyond the horizon'. Respectful treatment of these spirits, in their animal or fish-like forms was essential for the maintenance of harmony between the human community and the beings of the spiritual world.

Supporting this world-view, one ethic dominates Nuu-Chah-Nulth philosophy: that of 'reciprocity'. Due respect was to be afforded to the spirits of the animals and fish on which humans depended, for it was the state of this relationship that ensured an adequate future supply of resources and the continued survival of the entire human community. Infringements of the established codes of behaviour and rites for hunting and fishing were perceived to have direct and sometimes catastrophic consequences.[182]

This ethic forms the bedrock for the resource use system of the Kyuquot people. The levels of population and technology may have *limited* the impact of local communities on the natural resource base, but it was the ethic of reciprocity, combined with the structure provided by the institutions of the ha-houthle and the traditional ecological knowledge base of the whet-wock that constrained use and held human exploitation below sustainable thresholds. Though fishing technology was basic, weirs constructed across the rivers could have prevented salmon from migrating upstream and could have resulted in spawning failure and the extermination of the run. If this did in fact occur, the local people must have learnt from the experience and passed on this knowledge in the institutional memory of the teachings of the elders.[183] The Kyuquot language does in fact contain words both for scarcity (*kam'aas*) and for severe famine (*Haaha'umy'h'*).

Various food sources and harvesting strategies also built into this traditional system the necessary flexibility and adaptability to cope with the natural cycles of supply. Harvesting effort could be 'managed' by the whet-wock to match seasonal or annual variations. It is important to recognise however, that the concept of ***management*** as a discrete function, divorced from daily life, is alien to the traditional culture of the Kyuquot people. Sound management was more often achieved through wise and generally conservative patterns of resource use alone, supported by the pervasive ethics of reciprocity and respect.

The resource use system described above provides a very different model of traditional Nuu-Chah-Nulth society than the mythical view of nomadic hunter-gatherers which is so widely and so mistakenly believed. The system was highly refined and sophisticated and like many other similar indigenous management systems, is only beginning to be deciphered by non-Native people, but it was only a part of the broader and more comprehensive cultural system that guided the use of property and provided structure and form for resource-dependent indigenous societies. Even from the brief overview provided here, it is clear that this system fulfils the multiple functions of livelihood security, access equity and conflict resolution, mode of production, resource conservation and ecological sustainability, set out by Berkes and Farvar.[184] The traditional resource use system of the Kyuquot people should therefore be given full recognition as an effective communal property system that has been much undermined, but which persists in the memory of the people even to the present day.

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[182] See for example, Kirk, R. *Wisdom of the Elders: Native Traditions on the Northwest Coast*, (Vancouver and Toronto: Douglas & McIntyre in Association with the Royal British Columbia Museum, 1986): 81-88.

[183] Peter Usher makes a striking point here in regard to indigenous wildlife management systems across the continent: "Every person knew and observed a complex set of rules about how, where, and when to hunt, and importantly, not to hunt. These rules were commonly expressed in a metaphor of religion and spirituality, although the fact that a lot of them served in result, if not in conscious or well articulated intent, to conserve both the resource base on which the group relied as well as harmony within the band, suggests that they had a material as well as ideological basis. It is true that these rules did not work always or invariably, but it is ridiculous to suggest that substantiation of one or even several instances where they did not is grounds for completely rejecting their existence and function throughout the breadth and depth of Native peoples' experience on this continent. It is unbecoming in the extreme when the suggestion comes from a society that, by virtue of its own alleged modernity and sophistication, has managed to obliterate more species on the North American continent in less than a century than had disappeared since the Ice Age." from "Property Rights: The Basis for Wildlife Management", op. cit., 394.

5.2 Key Characteristics of the Traditional Resource Use System of the Kyuquot People

It would be unrealistic in the extreme to suggest that the traditional resource use system could be revived in its original form. No-one would suggest that this should be considered and few would welcome any attempt simply to return to the past, least of all the Kyuquot people themselves. What the tribe does support however, is the attempt to retain some of the essential characteristics of the system in a rehabilitated form so that the same sense of stability and security can be reproduced in the modern context.

Accordingly ten key characteristics of the traditional system have have been distilled from the overview presented above.[185] These are set out below.

1. The system embraces the concept of communal property rights and emphasises collective management and use.
   Rights of resource use, access and management were held collectively by the community, and though administered by an individual on their behalf, could not be alienated from that social and political unit.

2. The system is founded on long-term commitment to place.
   All users of the resource base are resident in Kyuquot Sound and can be expected to have a sense of 'investment' in the local area. It is in their best interests to sustain the productivity of the resource base on which the community depends and there is a commitment to keep options open for future generations.

3. The system is supported by an identified community of users and has recognised territorial boundaries.
   The system relies on the co-ordinated actions of an identified community of users who recognise and observe territorial boundaries. Other users are occasionally given permission to share in local surplus and excess is sometimes exchanged through trade.

4. The system relies on individual and group responsibility rather than coercion and enforcement.
   All the users of the resource base recognise a codified set of rules or agreements that sets out their mutual responsibilities to one another. The stability of the system relies on observance of this code.

5. The system delegates authority to the local level and encourages active participation in decision-making.
   Although individuals are recognised as authority figures, working agreements are established wherever possible to maximise the effectiveness of the system and to simplify access and allocation. Decisions are rarely made without active community participation and often rely on direct feedback from those using the resource at the most local scale.

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[184] Berkes, F. and Farvar, M. T. "Introduction and Overview," op. cit., 11-13.

[185] Again it must be conceded that the wording adopted here is strongly influenced by the literature reviewed in earlier chapters; that the theory and research overlap in this way is unavoidable in collaborative work of this type. Furthermore, an earlier version of this list was included in a draft management proposal, completed by the author and accepted by the Band Council of the Kyuquot Native Tribe; if this account is to retain its legitimacy it is only right that the wording used previously is employed here.

6. Management authority relies on community consent, maintained through respect.
The authority of decision-makers is limited to that which flows from the respect of the community they represent. If decisions made are subsequently seen to reflect unacceptably poor judgement, the consent of the community may be withheld and the authority figure deposed.

7. The system is conservative at the local level.
The management territory is subdivided into a number of discrete management units, and though there is much co-operation and sharing between these units, each one is largely independent. The system operates in such a way that individual stocks are conserved, thus providing multiple safety-margins and a considerable net buffer to overcome more widespread dramatic fluctuations.

8. The system emphasises the inter-linkages within natural systems and promotes an ethic of reciprocity.
The system retains sophisticated ecological knowledge of many single species and observes their relationship with other elements of the natural and spiritual world. All beings are given respect and contraventions of the codes of conduct are perceived to have direct consequences for that and other elements of the system. This system encourages humility and discourages the accumulation of surplus for individual gain.

9. The system is adaptive and resilient.
The system is able to cope with fluctuating supply by rotating and alternating harvesting strategy both spatially and between different species. When complete failures do occur in one sub-area, adjacent areas may be able to provide temporary support.

10. The system encourages progressive learning and retains an institutional memory.
The elders and the whet-wocks rely on the accumulated knowledge and experience of both management failures and successes.

CHAPTER 6:

COMMUNAL PROPERTY SYSTEMS AND THE DEVELOPMENT OF AN APPROPRIATE COOPERATIVE MANAGEMENT SYSTEM FOR CLAMS IN KYUQUOT SOUND

The new relationships that are necessary for successful cooperative management and the particular institutions that are developed to support such initiatives can only evolve over time, growing and adapting to the changing demands that are placed upon them. This step-by-step progress, while frustratingly slow and cautious for some may in fact be one of the essential ingredients of successful co-management - even committing to the idea of a more collaborative style of management may be perceived as a risk for some groups, and if a new management system is to be stable and enduring, steady progress may be preferred to bolder but more risky steps. For this reason, it would be unwise to present here the 'blueprint' or a 'finished package' for a cooperative management system for clams in Kyuquot Sound. Such a contrived proposal would not be truly appropriate and would be unlikely to satisfy the complex demands of the many user groups.

What this chapter does address however, is the more practical task of developing a skeleton framework upon which cooperative management can be based. The objectives here are firstly, to establish a *vision* of improved management by generating a set of founding principles to which each of the users groups can subscribe, and secondly, to suggest a *process* which can lead towards this goal. The sections that follow draw on the themes and normative criteria presented in chapters 2 and 3, particularly the need to revise the conventional roles of manager and user, develop trust, and build on mutual responsibility rather than relying on mutual coercion. The conclusions and recommendations presented refer specifically to the clam fishery in Area 26, but are intended to be of general relevance for other resource management conflicts in similar, cross-cultural settings.

6.1 The Vision: Appropriate Cooperative Management

This section develops a vision of an appropriate cooperative management system for clams in Kyuquot Sound. Firstly, a number of critical trends in the legal and political arenas are identified. These trends influence the context in which the dispute in Area 26 is set and they have significant implications for the development of future management arrangements. Secondly, a set of founding management principles are presented. These principles are based on the key characteristics of the traditional resource use system of the Kyuquot Native Tribe, but they have been adapted to match the more complex demands of a wider community of users. Finally, a skeleton framework for the cooperative management of clams is proposed, based on the normative criteria established at the close of chapter 3.

The Shifting Contextual Environment: Recognising Emerging Trends and Their Implications

The recent conflicts on the West coast have left many of the stakeholders highly critical of the present management regime and frustrated by DFO's reluctance to introduce reforms. The analysis in chapter 4 has also shown that in almost all cases, stakeholders have developed an understanding of the conflict that is coloured by their own cultural, political and social ideology. Many of the ideas and proposals that circulate within stakeholder groups reflect a unique frame, laden with assumptions and beliefs that are often least apparent to the actors themselves. This, in turn, suggests that the resolution of the dispute will demand that the area of overlap between these respective frames is expanded through sustained dialogue and mediation - a process that is considered in a later section.

There is however, a further dimension to the problem that needs to be addressed here. As Rein and Schön have pointed out, the process of reframing the dispute requires not only an appreciation of each stakeholder's underlying values, theories and interests, but also an understanding of the shifts in the contextual environment that affect the evolution of new agreements. Negotiations aimed at resolving the conflict will only be of limited success if these shifts - changes that often determine the status, political leverage and bargaining power of each group - are not acknowledged. This is all the more critical because final outcomes are just as heavily influenced by a group's ability to 'get to the table' and their ability to exert influence once there, as by the character of the underlying interests they promote. Both dimensions - the frame conflicts themselves at the core, and the more general shifts in higher levels of the contextual environment - are closely intertwined but both must be addressed before a satisfactory resolution of the conflict can be achieved.

It has been noted above that the contextual environment on the West coast is already in a state of flux. The numbers of licensed clam diggers increased rapidly over recent years but has now fallen again with the introduction of area-management restrictions. The market for the product is gaining strength and the price of clams is rising steadily. Such changes, occurring at what Rein and Schön refer to as the proximal or macro levels, affect the relative economic importance of the fishery and the attention that is directed to it by DFO management staff.

There are however, further changes in the macro level context which have more substantial implications for the resolution of the conflict on the West coast. These macro shifts are occurring in the legal and political arenas and they affect the tone of resource management not only in Kyuquot Sound but on a national scale.

Firstly, there are growing demands on resource management agencies to revise their methods to incorporate community participation and to adopt more environmentally-sensitive practices. This is a result of the blossoming interest in environmental issues throughout the country and an increasing number of highly visible and well-publicised management failures, such as the increased media attention directed towards forestry practices and clear-cutting; oil transportation, offshore drilling and major spills both on the West coast in February 1990, and in Prince William Sound later the same year; degradation of prime agricultural land and parkland through development on the urban fringe; declining populations of rare and endangered wildlife and continued threats to their habitat; and a host of other issues.

Secondly, there is increasing militancy in the Native Indian community. Though public support for their cause fluctuates, this militancy has led to a growing sense that the many outstanding questions of aboriginal title and rights to land and resources must be addressed, and addressed quickly. In recent months there have been a number of dramatic incidents that have driven this point home, including declarations of sovereignty by the Nations of Haida Gwaii; Elijah Harper's successful attempt to scuttle the Meech Lake Accord; the armed stand-off at Oka, Quebec, and the spate of ugly riots that have ensued as a result; and, a number of roadblocks put up to show sympathy for the Mohawk cause. In recent weeks these confrontations have gained an international profile and there is now reason to believe that both federal and provincial levels of government will be forced to explore a new and more dynamic approach to the settlement of outstanding claims.

Finally, there is a growing legal momentum behind the claims of aboriginal people. The final ruling of Sparrow is but the latest in a line of precedent-setting court victories that support the recognition of aboriginal title and point towards the need for revised legislation. It is the courts that are compelling the process of negotiation and such developments have over-shadowed the federal land claims process which now appears to be almost redundant. There is even some speculation that the most recent agreement, the Yukon Umbrella Final Agreement, drawn up between Canada and the Dené-Metis of the North West Territories may now not be ratified.

In British Columbia, these trends have dramatic implications for the overall context of resource management. Eighteen claims have been 'acknowledged as legitimate' by the federal government and a further three are under review, each covering large tracts of land. The federal Minister of Indian Affairs and Northern Development, under increasing pressure to improve on the sluggish land claims process, has indicated that he is poised to release a special 'package' dealing with settlements in B.C. In addition, though the provincial government had consistently refused to recognise aboriginal title and had refused to participate in negotiations, the Premier met with Native leaders in August 1990 to discuss land claims. Although officially the provincial government still maintains that aboriginal title does not exist, this meeting indicates that they recognise the need to initiate some form of continuing negotiations with Indian groups to resolve outstanding claims.[186] Given such dramatic developments, and providing that national momentum does not collapse, the settlement of the aboriginal land question in B.C. seems likely and the need to re-examine land tenure and management responsibilities becomes acute.

On the West coast, the land claims issue is at the heart of the conflicts in the clam fishery. If the tempo of recent events is sustained it can only be assumed that the Nuu-Chah-Nulth, and the Kyuquot Native Tribe in particular will be afforded an increasingly influential political role and will gain an increasing degree of access to decision-making. If this is the case, an improved management system must be able to accommodate this change and should reflect, or at least be consistent with, the political aspirations of that group.

At the same time, cooperative management by definition requires that a new regime is established by *all* parties, reflecting their shared interests rather than emphasising the needs and aspirations of any one group in particular. This demands that a delicate balance is struck between recognising the growing political and legal influence of the Native people on the West coast on the one hand, and acknowledging the legitimate stake of the many remaining participants on the other. The evolution of cooperative management will rely on the ability of negotiations to tackle this delicate issue head on and overcome it before any meaningful success can be achieved.

Such difficulties should be acknowledged, particularly in the following section where the key characteristics of the Kyuquot Native Tribe's traditional resource use system are translated into founding principles for contemporary management. The intent here is not to reproduce the traditional system in entirety, nor to ignore or underplay the needs of other groups, but rather to provide a local and time-tested foundation for appropriate cooperative management.

Founding Principles for Cooperative Management of Clams in Kyuquot Sound

In keeping with the general theme of this study, the cooperative management system that is proposed here builds on the ideas locked in the traditional resource use system of the Kyuquot Native Tribe. The key characteristics of this system, listed at the end of chapter 5, have been adapted by the author in light of the positions and interests of the many stakeholders involved in order to provide a set of founding principles for the cooperative management of clams in Kyuquot Sound. These ten principles, together with the key characteristics from which they are derived are also listed in summary form in table VI.

1. In keeping with the sense of solidarity and co-operation that characterised the traditional system, the management framework should emphasise collective control and communal rights to access and use.

2. In order to promote a sense of investment in the local area, the management system should require each co-manager to sign agreements committing them to long-term participation in the cooperative management of Area 26. The management system should give precedence to local concerns but should avoid insularity - the goal here should be a sense of community solidarity combined with a sense of responsibility in a regional context. Accordingly, management goals should promote stability and local self-reliance rather than simply increased productivity.

3. To increase the sense of solidarity, the management area should be defined in terms of its membership and geographical extent. An area-based approach should be established and limited entry should be introduced. The management system should be co-operatively managed by an identified community of users.

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[186] See various articles in the August 1990 issue of *B. C. News*, the provincial government's public newsletter.

Key Characteristics of the Traditional Resource Use System of the Kyuquot Native Tribe	**Founding Principles for Appropriate Cooperative Management in Kyuquot Sound**	**Principles Underpinning the Present Management Regime for clams in Area 26**
Embraces the concept of communal property rights; emphasises collective management and use.	Based on a refined understanding of communal property; emphasis on collective control and communal rights to access and use.	Embraces the conventional concept of common property; emphasis on central management agency and the conventional roles of guardian/villain.
Founded on long-term commitment to place; emphasis on self-reliance rather than the accumulation of surplus.	Promotion of long-term commitment; precedence given to local concerns; emphasis on sustainability rather than simply increased productivity.	Founded on multiple goals of net resource conservation and regional social and economic benefits; emphasis on optimum sustained yield.
Management by an identified group of users within a recognised territory.	Increase the sense of solidarity through a local area-based approach; cooperative management by an identified community of users.	Open access conditions with some area restrictions; central management on behalf of a poorly identified community of users.
Reliance on responsibility and mutual obligations, established through tradition.	Rules and code of practice established in order to reduce transaction costs; emphasis on responsibility.	Reliance on the enforcement of management regulations.
Delegates authority; encourages participatory decision-making.	Consensual decision-making; emphasis on participation and the utilisation of local skills and knowledge.	Centralised decision-making with some local consultation.
Reliance on community consent, maintained through respect.	Authority rests at the level of a committee comprised of elected representatives from each of the stakeholder groups.	Reliance on the authority of a government management agency, maintained through democratic consent.
Conservation at the local level.	Conservation at the local level.	Net conservation at the regional level.
Emphasises inter-linkages; promotes the ethic of reciprocity.	Emphasises a holistic approach, supporting the short-term costs of experimentation and research.	Adopts most rational and least costly management system.
Adaptiveness and resilience in harvesting strategies.	Sub-units of management allow for rotational openings.	Emphasis on coastwide management regulations and economic efficiency.
Encourages progressive learning and retains an institutional memory.	Periodic reviews of the experimental programs; 'open-door policy'.	Advisory Committee provides a forum for consultation only; institutional memory relatively inaccessible.

Table VI. A table showing how the key characteristics of the traditional resource use system of the Kyuquot Native Tribe have been adapted to provide a set of founding principles for cooperative management in Kyuquot Sound, and how these principles compare to the present management regime for clams in Area 26.

4. Various rules and codes of practice should be established in principle to minimise transaction costs. The system should embrace the concept of 'mutual responsibility, mutually agreed upon' rather than Hardin's 'mutual coercion, mutually agreed upon'.

5. In accordance with a communal style of management, authority should not be invested in a single group. Decisions should be made by consensus among a committee of co-users and implemented by a nominated body or organisation that is held accountable to the committee. Direct participation and input from the local level should be encouraged.

6. To ensure access to decision-making and accountability, the management committee should be made up of elected representatives. Though continuity and experience should be valued, nominees should stand for re-election on a regular basis.

7. In keeping with the traditional system, the goal of self-reliance on the most local scale should be pursued. The conventional management principle of 'net-conservation' or 'no-net-loss' should be discarded in favour of higher resolution approaches that strive to manage stocks on a beach-by-beach level and ensure wider margins for conservation.

8. In order to retain the kind of holistic approach that underpins the traditions of the Kyuquot people, the management system should direct research towards understanding the relationship between clam populations and other elements of the local ecosystem. The effects of environmental stresses and alternative harvesting strategies should be explored.

9. The flexibility of traditional harvesting strategies should be reproduced. To achieve this, the management area should be sub-divided into a number of smaller units with rotational openings.

10. The traditional system relied on participation and the sharing of opinions and ideas between 'managers' and 'users'. Accordingly, the management system should conduct periodic reviews, with an open-door policy, and should adopt a progressive agenda. Experimental management methods should be introduced, including enhancement.

A Skeleton Framework for Cooperative Management of Clams in Kyuquot Sound

Given the founding principles outlined above, a skeleton framework for the cooperative management of clams in Kyuquot Sound is outlined below. This framework has been developed by the author in collaboration with both the NTC and the KNT and an earlier, condensed version appeared in their draft management proposal. The framework also reflects much of the language and many of the ideas that appear in the opening chapters of this study and while it is coloured both by these theoretical ideas and by the proposals put forward by particular stakeholder groups, it has been carefully re-modelled by the author in an attempt to satisfy the multiple demands of the wider community of users. For each of the elements of the management system, a supporting rationale has been included.

(A) MANAGEMENT SUPERVISION: An 'Area Management Committee' should be established to oversee the management of clam stocks in Area 26 and it is here that local authority should reside. This committee, comprising of representatives of all the user groups should be responsible for developing working guidelines for management and for directing an experimental management program. The committee should also provide a forum for on-going dispute resolution and should demonstrate a commitment to the mediation of conflict rather then resort to formal legal procedures.

Rationale: Management through a committee structure of this type embodies the essence of a cooperative approach, reflected in the literature on bargaining and negotiation as well as in the literature on co-management itself. The traditional system on which this approach is based encouraged participatory decision-making and this feature should be retained. The traditional 'potlatch' also provided a forum for the affirmation of property rights and for the settlement of conflicts and this should be reproduced through management meetings, open to all co-users.

(B) AREA: Statistical Area 26 (West Coast Vancouver Island) to be revised to match the traditional territories of the Kyuquot Native Tribe, extending from Cape Cook to Grassy Island.

Rationale: Adjusting the boundaries of the statistical area in this way requires only a minor revisions and yet, in the event of a land claims settlement, would avoid the potential problems of overlapping jurisdiction between the territories of the Kyuquot Band and the Ehattesaht Band immediately to the South.

(C) MANAGEMENT SUBDIVISIONS: Area 26 should be subdivided into a number of smaller management units with a similar number of productive clam beaches in each. For simplicity's sake, there should be no more than 4 or 5 of these areas.

Rationale: Subdivision opens up the possibility for rotational openings, increases the resolution of management more generally and builds-in flexibility. However, the complexities of management increase as the number of sub-areas rises. For this reason, between 3 and 5 such areas may be preferred.

(D) ROTATIONAL OPENINGS: Each sub-unit would be opened on a rotational basis for a minimum period of one full tidal cycle.

Rationale: Rotational openings allow regular adjustments in allocation, ensure higher resolution management for conservation and prevent or ease the problem of re-digging.

(E) ALLOCATION: The distribution of catch should be negotiated between the users of the resource but should be based on a 'fair' division between Native and non-Native users. In addition, the allocation of catch within the non-Native community should give priority to those who can demonstrate a long-term commitment to co-operative management in Area 26.

Rationale: In the absence of a clear ruling on aboriginal rights, the management system should strive for equitable allocation between competing user groups. A set of criteria which can be used to determine whether equity is being achieved should be established as part of the negotiations.[187] Unlike the traditional system, 'outsiders' cannot be excluded altogether, but they should be prepare to demonstrate their long-term interest in the local community.

(F) SUB-UNIT CLOSURES: Each sub-unit should be closed to commercial harvesting either for conservation reasons or when allowable quotas have been met. Selective closures can also be introduced to ensure equitable allocation.

Rationale: In keeping with the flexibility of the traditional system, sub-unit closures ensure conservation on a local scale.

(G) LICENCING: A limited number of licences should be issued for clam harvesting in Area 26 by non-Native residents and other non-resident diggers. These licenses should not be freely transferable but should be issued by and returned to the Area Management Committee (see below) for re-distribution. The transfer of licences from one generation to the next should be considered. The Kyuquot Native Tribe should be held responsible for the allocation of commercial catch amongst its own members, either through a parallel licensing system or through a community quota.

Rationale: The community of users co-operating in the management of clams in Area 26 should develop some collective identity. Without restricted entry, the sense of collectivism would be lost.

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[187] The issue of equity and the kind of mediated process necessary to reach this goal are elaborated below.

(H) SUBSISTENCE/RECREATIONAL CATCH: The harvesting of clams for subsistence or recreational use should not require a licence and should not be included in the allocation of commercial catch. Any such harvesting should however be reported so that accurate stock assessment and harvesting data can be maintained. If considered necessary, a maximum total limit should be established to ensure that the viability of commercial harvesting is not threatened.

Rationale: The management system should respect the existing rights of all parties to take a limited amount of shellfish for their personal use. For the Native comunity in particular, their claim to an aboriginal right to harvest clams for subsistence use should be respected.

(I) MANAGEMENT TECHNIQUES: A number of alternative and experimental management methods should be introduced singly or in parallel to determine which is the most effective. These might operate at the sub-unit level or on a beach-by-beach scale and could include:

- Area Quotas. If data supports the determination of total productive capacity, quotas for sub-units or individual beaches could be imposed.
- Constant Harvest Rate. Though implementation on a wider scale might be problematic, this method could be introduced as part of experimental management in isolated areas.
- Constant Escapement. Monitoring of catch-per-unit effort could be introduced as part of experimental management.
- Beach permits. In order to prevent re-digging, a limited number of permits could be issued for the most productive beaches.

Rationale: In accordance with the principles of progressive learning and long-term commitment, short term management costs should be accepted in the interests of increasing the knowledge base.

(J) SIZE-LIMIT: The existing legal size limit of 38mm should be maintained.

Rationale: In accordance with the principle of conservation, clams should be allowed to spawn at least once before harvesting.

(K) SUBSISTENCE-ONLY BEACHES: Certain beaches should be designated as subsistence only to satisfy the food requirements of local native residents.

Rationale: In keeping with the traditional lifestyles of the Kyuquot people, beaches directly in front of reserve land (for example) should be reserved for their own use.

(L) ENFORCEMENT AND MONITORING: A technical working group, office and computer-supported data-base should be established in Kyuquot. The group's terms of reference should be established by the Area Management Committee and should include the monitoring of catch and the implementation of closures. The staff of the group should be appointed by the Area Management Committee and should include members of a number of user groups. This group would conduct surveys, run experimental management and enhancement programs and be responsible for stock assessments on a continuing basis.

Rationale: The traditional system appointed a whet-wock to be responsible for local management. This figure was held accountable by the hereditary chiefs and the community they served. In keeping with this tradition, a small team of 'stewards' should be appointed to carry out day-to-day management tasks.

(M) LANDINGS TAX: A 10% landings tax should be levied on all commercial catch. This should be collected through the processors and directed towards the management efforts in Area 26. This tax level could be reviewed on an annual basis.

Rationale: Co-users of the resource should be able to substantiate their support for management activities. This enhances the sense of participation and commitment.

6.2 The Process: Getting to Cooperative Management

The previous section has developed a vision of cooperative management in Kyuquot Sound and a skeleton framework has been proposed. This section now turns to the challenging task of 'getting a cooperative management system off the ground'.

Resolving Frame Conflict: The Promise of Mediation

The analysis of the case-study presented above has shown that one of the fundamental sources of conflict in Area 26 is frame-conflict. Each stakeholder group holds to a particular view of the dispute which is coloured by a set of intertwined theories, beliefs and interests, many of which are unique to that group. It has been suggested that the resolution of the conflict cannot be achieved unless the area of overlap between these various frames is expanded and that this task requires the services of an independent player - an organiser, sponsor or mediator - who can help groups to understand the assumptions on which their opponents positions are based, as well as their own.

The nomination of a suitable mediator may itself present a significant problem. The various stakeholder groups in Area 26 have firstly to be drawn together and convinced to cooperate in the identification of a mutually acceptable figure (or figures) - a delicate process given that many of the groups have no established channels of communication and may be suspicious of each other's intentions. More problematic still is the fact that there are few individuals who can fulfil the very demanding requirements for such an intermediary role. Although recent developments south of the border in Washington State have produced a number of skilled mediators and negotiators, the particular context on the West coast demands a high degree of sensitivity to cross-cultural issues - a characteristic that features less prominently in other areas.[188] As Dale has noted, the 'profile' of the mediator is critical for they are instrumental in the reframing process - if they carry their own assumptions and biases over into the negotiations, they risk superimposing their own frame rather than encouraging the development of what might be called 'integrative frames' that represent the product of interactions between the parties.[189] Consequently, if the stakeholders in Area 26 simply appeal to an established 'wise-person' to resolve their dispute, they are unlikely to uncover the fundamental source of conflict. It would be more difficult, but more productive to enlist the services of a mediator who can facilitate their interaction but who resists the temptation to inject his/her own, ready-made solution. (In light of this, the skeleton framework outlined above is intended to stimulate discussion and to illuminate the range of issues and concerns that should be addressed, rather than as a rigid set of proposals that are not open for change).

It is also critical that all the participants in the conflict gain access to the process. At present some parties, particularly the seasonal clam diggers, are poorly represented and yet their full cooperation is essential. It will be necessary therefore to establish some organisation or coordinating body to represent their interests. It may also prove necessary to involve the provincial government, for though they have minimal influence in the present management system, the development of an area-based, cooperative management regime may affect their licensing of the foreshore for aquaculture and may overlap with their jurisdiction in other, as yet unanticipated ways. In general, the rule of thumb of the negotiator should prevail - everyone who could 'sink' the final agreement should be seated at the table.

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[188] Mediators played a significant role in the aftermath of the Boldt decision, and later in the development of the Timber, Fish and Wildlife Agreement. (See for example, Dale, N. "Getting to Co-Management: Social Learning in the Redesign of Fisheries," op. cit., 49-72.) However, Tribes in Washington State have been more acculturated into the 'great American melting pot' than the Nuu-Chah-Nulth people on the West coast, and their demands were less coloured by the desire to follow paths of development that reflect tradition and cultural heritage. (Mr. Bill Green, Fisheries Policy Advisor, NTC, pers. comm.).

[189] Dale, N. "Getting to Co-Management: Social Learning in the Redesign of Fisheries," op. cit., 63-64.

The choice of a forum for the mediation of the conflict should also receive careful attention. Mason and Mitroff suggest that such a forum should be 'participative', 'adversarial', 'integrative' and 'managerial mind-supporting' - a demanding list by any standard. Their work however, does not deal directly with the additional difficulties of cross-cultural contexts where some groups may find such a 'challenging' style of problem-solving unpalatable or even unacceptable. In Kyuquot Sound, where players are drawn from very different cultural backgrounds, it may be beneficial to establish a set of preliminary discussions aimed at identifying a suitable forum and an acceptable process for more substantial negotiations.

There is an additional problem of status that needs to be overcome. The reaching of co-management may be hampered by the reluctance or inability of DFO to acknowledge the claim of the NTC or KNT to special status - a claim which these Native groups can be expected to establish as a pre-condition for their participation in negotiations. Although the influence these aboriginal groups exert is increasing in light of recent political and legal developments, DFO may simply be unable to recognise their special status in this regard in a formal way for fear of setting a dramatic political precedent. In turn, Native groups may feel frustrated if the government agency retains management authority throughout the development process for it is likely that existing policy mandates would require DFO to bargain for 'default clauses' to cover the possibility of management failure. If Native groups were seen to be participating in negotiations as just one of a series of interest groups in this way, their strategic legal position may be fatally compromised. Similar problems of status have been overcome in other areas and one of the principal tasks of the mediation process would be to create the conditions that allow each and every player to 'buy in to the process'.[190]

A further problem is the need to revise the roles of the players involved. The conventional roles of guardian and villain are deeply entrenched and it may take considerable time and a substantial effort to convince fishers and managers alike that they share common interests. Experience in other areas has shown that this process does not occur overnight but that it is helped considerably by symbolic gestures of cooperation and trust. In Kyuquot Sound much would be gained by early commitments to experimental management, such as spawner sanctuaries, control beaches closed to all groups and a more open sharing of technical information. Hands-on experience and first-hand exposure to other groups is of particular importance and field-trips, or other similar opportunities to meet face-to-face are likely to have dramatic effects.[191]

Experience has also shown that there is considerable advantage in separating negotiations aimed at resolving technical issues from the more general discussion about management.[192] Uncertainties about the science of clams on the West coast is one of the principal sources of conflict and the mediation process should seek to resolve this problem. This has already been tried to some extent in Area 26, although it appears that the structure of the initial technical meeting collapsed resulting in a rather unproductive and antagonistic exchange. One of the early tasks of the mediator would be to bring these parties back to the table, to encourage them to pool their knowledge and to establish a parallel process involving all the groups aimed at reducing technical uncertainties with respect to the biology, life-cycle and population dynamics of manila clams on the West coast.

Finally, the thorny problems of allocation and access have to be addressed. The skeleton framework outlined above deals with these volatile issues only superficially and yet they are central to the establishment of a successful and stable cooperative management regime. The principle of 'fairness' should prevail but the claims of each of the groups are unlikely to be reconciled so simply in the light of their conflicting interpretations of property rights. On the one hand, Native groups may feel that their aboriginal rights support their claims to exclusive control of the resource; on the other hand, many stakeholder groups believe such a claim to a recently imported species is unjustified and they underline what are perceived to be their own legitimate rights to common property. This issue may have to be settled in court and the success of co-management in Area 26 would then be largely determined by the ability of the stakeholders to cope with the tensions and conflicts that such legal wrangling would prompt and their willingness to overcome residual grievances once a decision was reached. Even then, the equity issue can be expected to resurface throughout the negotiations and it is essential that the parties establish, collectively, a set of criteria by which to judge whether an equitable agreement has been reached. This process of generating criteria may be time-consuming but itself can contribute to the reframing of the dispute. For those excluded from area-based management, it can only be hoped that they would be able to support their livelihood in other areas of the West coast where license limitations do not apply.

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[190] Recent negotiations between the federal government and the Haida Nations faced a similar problem. This was finally overcome by a clause in the agreement acknowledging that the Haida enjoy the privileges of Canadian citizenship but also recognising that they consider themselves to be members of the sovereign Haida Nation. The fine tuning of a similar arrangement on the West coast may rely on the creative use of legalese.

[191] See for example, McCay, B. J. "Co-management of a Clam Revitalisation Project: The New Jersey "Spawner Sanctuary" Program," op. cit., 103-124.

[192] Cormick, G. and Knaster, A. "Oil and Fishing Industries Negotiate: Mediation and Scientific Issues," *Environment* 28 (10) (December 1986): 6-15.

These problems are considerable and each of them must be overcome if the mediation process is to succeed. None however, appear to be so intractable that they would be resistant to solution by a creative and imaginative approach. The key here is to expose the underlying frames of each of the parties through the process, and to generate a firm base of cooperation by successive small steps. Such a gradual progress in itself, may uncover new solutions to old problems by redefining the issue at stake - rather than demanding compromises that satisfy neither party, the process of reframing may identify mutually beneficial options that only become apparent when the picture of the conflict is redrawn. The final outcome will reflect the creativity of the mediator, the willingness of the parties to overcome problems along the way, and the commitment of all involved to reaching the goal of cooperation.

Remaining Barriers

Despite the considerable promise of mediated negotiations, there are a number of remaining elements of the conflict in Area 26 that cannot be resolved by process alone. These residual problems can only be overcome by substantive changes in other arenas.

First, and perhaps the most fundamental of these residual problems, is the need to establish the willingness to try. The establishment of cooperative management in Kyuquot Sound is an experiment that may be perceived as risky by some participants, or as a waste of scarce managerial resources by another. For DFO in particular, committing to local area management is not only costly but it would set a precedent which could easily lead to similar expectations in other areas and in other sectors of the Pacific fishery. Similarly, for the NTC, participation in a collaborative process may define their status in the eyes of the legal and political system - something they may be reluctant to commit to at this stage given the recent spectacular success they have achieved in the courts. However, amongst DFO's regional management staff, at the level of the policy advisor for the NTC, within the Kyuquot Native Tribe, and in the eyes of representatives of processing firms, the idea of cooperative management receives considerable attention. In the light of recent confrontations, and faced with dormant tensions that threaten to erupt in Area 26 if the present closure is lifted, there does seem to be the necessary willingness to explore a new approach that reduces conflict and its associated transaction costs. Such willingness may not be sufficient however, unless it is translated into more progressive policy at upper levels of the management system. Until this change occurs, the restrictive mandates of DFO's regional staff may simply not leave sufficient manoeuvrability for anything more than symbolic moves towards cooperative management.

However, even if all the parties in the dispute can be convinced to commit themselves, the choice of Area 26 for such an experimental management system may still be contested. DFO maintains that the remoteness of Kyuquot Sound, together with slower growth rates in these colder northern waters makes the area highly unsuitable - they argue that experimental management should be attempted in more accessible areas where the response of natural stocks is more immediate. The counter argument here is that the remoteness of Kyuquot is matched by a corresponding absence of local conflicts in other sectors of the fishery. Other, more accessible areas are more populated and experiments are therefore more susceptible to interference. Also, there are fewer stakeholders here than in other areas and a less complex set of negotiations as a result. Perhaps most importantly, while experimental management in Area 26 may not produce dramatic scientific results, it can be argued that it is not only the science that is under scrutiny. The true value of experimental approaches lies in the structure they provide for the development of new working relationships - it is the relationships amongst the stakeholders and not the clams that are the real focus of the experiment.

A second problem that remains is the compatibility of such an approach with the regional market economy. A communal management system that places considerable emphasis on long-term stability seems to be contrary to capitalist principles, for the accumulation of surplus for individual gain is given less emphasis than the benefits that accrue to a collective. While such principles have been successfully implemented in small-scale co-operatives and in other similar economic development projects, success often demands a commitment by all players to the ideal of communalism itself - something that the processing industry on the West coast may find unpalatable. While the opportunity for making a healthy profit is by no means reduced, if industry cannot be convinced that a stable supply and a reduction in conflict are more attractive than competitive purchasing, a co-operative system will never get off the ground.

The last and most troublesome problem that remains is the conflicting interpretation of common property. The dispute in Area 26 revolves around this pivotal question and progress towards the kind of cooperative management system proposed here will be limited unless all parties can agree on a more refined definition. The crux of the problem facing the mediator is that any attempt to develop a more refined working definition holds substantial legal and political implications, for property rights underlie both the conventional approach to resource management, and the question of aboriginal rights. This issue is so loaded that it would quickly be passed on to the lawyers and out of the hands of the co-managers who most need to benefit from the process of collective learning. It is possible however, that the ruling of Sparrow has created a climate in which such a redefinition can take place - certainly the ruling of the court encourages Native groups to come forward and demonstrate how management regulations may infringe on their rights. In terms of resolving the dispute in Area 26, there would be much to be gained from carefully managed early discussions of this issue that attempt to close the gap between the emerging legal realities and the interpretation of common property that informs the present management system.

Beyond such technical issues of definition of common property, there remains the question of the pervasive beliefs that inform each of the players currently locked in conflict. For clam diggers, redefining common property may mean conceding that a 'legitimate right' to common property resources is not in fact as legitimate as has always been believed. On the other hand, it may also require the membership of KNT to agree that in contemporary times, their aboriginal title to land and resources may not give them the right to exclude other residents of the West coast from enjoying some share of the benefits of intertidal resources, nor perhaps exclude all non-residents either. This may not be an insurmountable problem, as the KNT, at least, have stated their willingness to share the resources in many of their press releases and statements. It may in fact transpire that it is the resource managers who have the most difficulty understanding a new system of property rights and believing in a management system that appears contrary to much of their training and practical experience.

In terms of the conflict on the West coast, these problems represent hurdles that cannot be overcome by process alone, however creative and innovative. While mediation can contribute to reframing and just as importantly, assist in the interpretation of many of these issues once clarified, reaching agreement on these residual problems demands substantive changes that fall outside the realm of local negotiations. The implications of each of the problems mentioned above are far-reaching and, to put it bluntly, with livelihoods on the line, the stakes are high indeed. To expect mediation to overcome such problems may simply be unrealistic. That is not to say that the mediation process should not commence - on the contrary, the process of reframing the dispute may in fact uncover more of these substantive issue that have to be directed to the courts or other institutional forums and may uncover innovative ways of reaching a solution. But to use the parlance of Rein and Schön once again, what will undoubtedly be required are further significant shifts in the contextual environment, shifts which are translated through each level right down to the wording and implementation of management policies. If these shifts do not occur, or if the reframing is symbolic or rhetorical only, then gains in the mediation process will quickly and dramatically be undermined when these residual issues resurface. If success is to be achieved, what is required above all, is the patience to allow these substantive problems to be resolved, and the willingness to be creative in their interpretation once agreements have been reached.

6.3 Conclusions

This study has analysed the relationship between systems of property and systems of resource management. In particular, the study has examined the institutions that are established to manage local renewable resources held in common. The case-study has explored how traditional communal property systems can be used as the foundation for more appropriate management and a proposal for the cooperative management of clams on the West coast of Vancouver Island has been presented.

This case-study has shown that the characteristic problems that beset conventional resource management can be overcome by an imaginative and innovative approach. It has been demonstrated that the ideas locked into traditional systems can be deciphered and transferred into more complex situations where the community of users does not share a common identity or subscribe to a common set of social rules or culture. This alternative approach redefines the relationship between managers and users, facilitates communication and encourages the growth of cooperation. By pursuing a collaborative style of problem solving and by adopting negotiation/mediation strategies rather than resorting to the courts, appropriate cooperative management can provide a more stable, more flexible and more efficient system of resource management.

This chapter now draws some final conclusions, arguing that while this alternative approach has considerable potential, one last major barrier must be overcome.

Cultural Inertia and the 'Traditional/Modern Dichotomy'

Critics of this kind of hybrid management approach will undoubtedly argue that the ideas presented in this study are verging on the naive. They will argue that traditional systems are of great historical interest but that they cannot be of relevance in today's vastly more complex and demanding world. With the pressures of an aggressive economic system and the growing demands on stocks of natural resources, how can such antiquated system be expected to survive? While they may respect the utilitarian value of indigenous knowledge, particularly of traditional medicines and plants, they will mock the idea of management systems based on hybrid institutions, passing them off as grand ideals, sadly flawed by blind belief in the 'ecological noble savage'.[193]

At the other end of the spectrum, there will be those who insist that traditional systems cannot be adapted so crudely. These critics may argue that traditional systems embrace a different cosmology that defines an almost religious relationship between humans and the natural world. They will argue that hybrid approaches merely treat the symptoms of a more fundamental malaise, side-stepping the very problem that has hampered our efforts so far. Proponents of this view will argue that the only possible course of action is to address more fundamental ethical issues first, and 'rekindle our own spiritual relationship to mother earth'.

Both viewpoints have merit and neither can be rejected outright, but they betray a characteristic weakness of our western culture. All too often, western society views traditional things as parochial and quaint, curiosities for museums and historians. At the other end of the scale, modern things are considered to be the stuff of progress, technology and science, holding almost limitless promise for our continued survival. With this rigid distinction firmly embedded in our minds, we embrace the trappings of modernity and relegate things traditional to the level of ornamental artifacts that remind us, with an air of the melancholy, of a bygone age. Such a type-casting may be stereotypical, but in many cases it holds true. The important point here is that by defining the notions of traditional and the modern in this way we overlook the possibility to find some 'middle path' that draws on the wisdom of tradition, and yet does not lose sight of the innovations of the modern age.

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[193] See for example: Redford, K.H. "The Ecological Noble Savage," *Orion Nature Quarterly*, (Summer 1990): 26-29.

Resistance to the kind of cooperative management system proposed here often reflects this cultural inertia. In some cases it is true, traditional systems of management may be so undermined that they cannot be revived or it may transpire that the system is inappropriate in the modern context. In these cases what is required is fresh ideas, imagination and innovation. In other cases however, if time and energy are dedicated to understanding the unfamiliar and the unique, we may learn that traditional management systems hold immense wisdom and practical knowledge that we simply cannot disregard. The essential point here is that no two situations are the same; if an improved management system is to be successful and truly appropriate, it must be crafted according to its local cultural and geographical context and not simply imported as a blanket formula from some other apparently similar setting. There will be some cases where the balance is shifted more towards the rehabilitation of traditional management and others where a more conventional approach must prevail. The success or failure of hybrid approaches rests squarely on our collective ability to overcome our cultural inertia, understand uniquely different systems, and harness the imagination and creativity available to bring them together.

New Directions for Resource Management

This study has explored a new direction for resource management. Appropriate co-operative management seeks to provide a revised framework for the stewardship of common property resources, one that rejects the conventional roles of guardian and villain and which relies not on 'mutual coercion, mutually agreed upon', but on 'mutual responsibility, mutually agreed upon'. Hardin's tragedy paradigm has formed the foundation for conventional approaches to management for over 20 years, but in the face of mounting evidence to the contrary, this paradigm deserves to be rejected. A growing body of literature calls into question the assumption that resource users will act in self-interest to the exclusion of their community and documents how co-operative strategies can emerge and survive even when the environment is full of selfish and greedy competitors.

In the fields of development planning and resource management alike, we are just beginning to recognise the value of local social institutions and are beginning to grant traditional systems the respect they surely deserve. The framework of cooperative management that has been proposed here builds on this traditional wisdom and provides solutions to the chronic problems of lack of communication, inadequate information and persistent tension that so often plague resource management efforts. Such innovative management systems, crafted according to context, are not only more appropriate, they can also be more effective and more successful.

Such fundamental changes in the practice of resource management are unlikely to occur overnight nor would it be wise to suggest that they should. The conventional view of common property and the assumption of self-interest appear not only in this discipline but they are embedded in the social and economic fabric of our society - if they are to be challenged we need to relearn our lessons slowly and carefully, giving ourselves the time to appreciate the subtleties of ideas that seem at first to be so very alien. However, as we move into the 1990's, with the problems of underdevelopment, environmental decay and spiralling social malaise becoming more and more apparent and becoming more and more intertwined, the climate within the field of resource management may just have changed to a sufficient extent to allow hybrid approaches to emerge. The appeal that is made here is for more conscientious and more thorough research to build on the wisdom of traditional systems. In doing so we may come to realise that to learn from tradition is not simply to return to the rustic or the parochial. In the words of John Daniel:

> It is true that we cannot and do not need to abandon wholly our present way of life. But, as anyone who has lost a trail in the forest knows, going back to find your way again is often the most sensible thing to do. Sometimes it is the only thing to do.[194]

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[194] Daniels, J. "Remembering the Sacred Family," *Orion Nature Quarterly,* (Summer, 190): 9-14.

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APPENDIX
List of Interviews.

A number of semi-structured interviews were conducted with the aim of gaining an understanding of the perceptions of each of the stakeholders involved in the conflict in Area 26. Where the participants agreed, the interviews were tape-recorded. This was often followed up by an exchange of letters and in all cases, the interviewees have been provided with a copy of the relevant sections of the final draft of the case study and have been asked to offer comments. Any such comments received have been included.

This interview process was approved by the University of British Columbia's Office of Research Services.

- Ms. Frances Dickson, Regional Shellfish Co-ordinator, Department of Fisheries and Oceans, 3/5/90, (Regional Offices, Vancouver).
- Mr. Rick Harbo, Shellfish Biologist, DFO South Coast Division, 26/3/90, (South Coast Division Offices, Nanaimo).
- Mr. Ed Lockbaum, Associate Area Manager, DFO South Coast Division, 26/3/90, (South Coast Division Offices, Nanaimo).
- Dr. Neil Bourne, Shellfish Research Biologist, Pacific Biological Station, 26/3/90, (Pacific Biological Station, Nanaimo).
- Mr. Loi Truong, Representative of the Nanaimo Clam Harvesters Association, 15/5/90, (Nanaimo).
- Mr. Stan Fuller, Representative of the B. C. Intertidal Clam Processors Association, 3/5/90, (Nanaimo).
- Mr. Bill Green, Fisheries Policy Advisor to the Nuu-Chah-Nulth Tribal Council, numerous discussions and meetings from December 1989.
- Mr. Alex and Mrs. Sarah Short, Respected Elders of the Kyuquot Native Tribe, 6/3/90, (Kyuquot).
- Mrs. Hilda Hansen, Respected Elder of the Kyuquot Native Tribe, 9/3/90, (Kyuquot).
- Mr. Ben Gillette, Respected Elder of the Kyuquot Native Tribe, 10/3/90, (Kyuquot).
- Mr. Robert Peters and Mr. Jim Nicolaye, Respected Elders of the Kyuquot Native Tribe, 12/3/90, (Campbell River).
- Mr. Richard Leo, Band Chief Councillor of the Kyuquot Native Tribe, numerous discussions from January 1990.
- Mr. Lenard John, and other members of the Kyuquot Native Tribe Fisheries Management Crew, numerous discussions from January 1990.